

COPY

STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

SITE CODE
200186

IN THE MATTER OF:)	Docket HWCA: P2-03/04-003
)	
The current and former)	
properties of)	CORRECTIVE ACTION
Pacific Gas and Electric Co.)	CONSENT AGREEMENT
located at)	
Highway One and Dolan Road)	
Moss Landing, California 95039)	
CAD 983 639 758)	
)	
Pacific Gas and Electric Co.)	Health and Safety Code
77 Beale Street)	Section 25187
San Francisco, California 94177)	
)	
Respondent)	
_____)	

1. INTRODUCTION

1.1. The Department of Toxic Substances Control (DTSC) and Pacific Gas and Electric Company (PG&E) (Respondent) enter into this Corrective Action Consent Agreement (Consent Agreement) and agree as follows:

1.2. Jurisdiction exists pursuant to Health and Safety Code section 25187, which authorizes DTSC to issue an order to require corrective action when DTSC determines that there is or may be a release of hazardous waste or hazardous waste constituents into the environment from a hazardous waste facility.

1.3. The parties enter into this Consent Agreement to avoid the expense of litigation and to carry out promptly the corrective action described below.

1.4. Respondent is the former owner and former operator of a RCRA permitted hazardous waste facility located at Highway One and Dolan Road, Moss Landing, California (Facility).

1.5. Respondent engaged in the management of hazardous waste pursuant to a permit issued by DTSC on March 13, 1995. Respondent's authorization to operate ended on July 1, 1998 when the permit and ownership of the Facility was transferred to Duke Energy Moss Landing LLC (Facility Owner). Respondent maintains ownership of substation property (Substation Property), which is surrounded by the Facility.

1.6. The terms used in this Consent Agreement are as defined in California Code of Regulations, title 22, section 66260.10, except as otherwise provided.

1.7. Respondent agrees to implement all DTSC-approved work plans and to undertake all actions required by the terms and conditions of this Consent Agreement, including any portions of this Consent Agreement incorporated by reference.

1.8. Respondent waives any right to request a hearing on this Consent Agreement pursuant to Health and Safety Code section 25187.

1.9. On May 7, 1998, pursuant to Health and Safety Code section 25262, DTSC was designated by the California Environmental Protection Agency's Site Designation Committee as the administering agency to oversee site investigation and remedial action by Respondent at the Facility for releases for which Respondent is liable.

2.FINDINGS OF FACT

2.1. The U.S. Environmental Protection Agency's (EPA) contractors (A.T. Kearney, Inc. (Kearney) and Science Applications International Corporation (SAIC)) performed a RCRA Facility Assessment and completed a RFA report dated September 24, 1986. The RFA documented a total of 15 solid waste management units (SWMUs) at the site (SWMUs 4.1 through 4.15). Two additional SWMUs were identified by Respondent and reported to the agencies subsequent to the RFA (SWMUs 4.16 and 4.17). These 17 SWMUs were referred to subsequently as the existing SWMUs. The RCRA Corrective Action Process for the existing SWMUs has been completed. The Hazardous Waste Management Permit was modified August 19, 1998 to terminate Corrective Action requirements for these existing SWMUs (Section V.A of the Permit). See Attachment 1 – Historical SWMU Summary Table for a listing of the SWMUs, document references and current status.

2.2. For purposes of evaluating the sale of the facility, and unassociated with the RCRA corrective action process, Respondent performed extensive soil and groundwater testing at the Property in mid-1997. On October 27, 1997, the Respondent submitted a Phase II Environmental Site Report entitled "Phase II Environmental Site Assessment - Pacific Gas and Electric Company, Moss Landing Power Plant, Moss Landing, California" (Phase II), dated July 1997. On January 27, 1998, the Respondent submitted a Phase II Environmental Site Report entitled "Phase II Environmental Site Assessment Report: Non Generation Property - Pacific Gas and Electric Company, Moss Landing Power Plant, Moss Landing, California" (Phase II Non-Gen), dated December 1997.

2.3. DTSC and PG&E entered into a Corrective Action Consent Agreement (Docket HWCA: P2-99/00-001; effective March 1999) for DTSC to review the Phase II Environmental Site Assessment Reports and to review interim measures work plans as developed.

2.4. The Phase II Environmental Site Assessment Reports (Phase II Reports) identified potential locations of soil and groundwater impact. The Phase II Reports are equivalent to a Current Conditions Report and were reviewed and accepted by DTSC on May 15, 2002. DTSC's review was performed in accordance with the Corrective Action Consent Agreement (Docket HWCA: P2-99/00-001) effective March 1999.

2.5. As documented in the Phase II Reports, the constituents of concern at the

Facility are Total Petroleum Hydrocarbons (TPH), Total Extractable Hydrocarbons (TEH), Volatile Organic Compounds (VOCs), Polyaromatic Hydrocarbons (PAHs), Metals (Inorganics), Polychlorinated Bi-Phenyls (PCBs), and asbestos.

2.6. Based on the Phase II Reports, DTSC concludes that further investigation is needed to determine the nature and extent of any release of constituents at the Facility and for which Respondent is responsible.

2.7. Subsequent to the preparation of the Phase II Reports, Respondent has been working with DTSC and the Facility Owner and has implemented interim measures and initiated additional investigation based on the Phase II Reports findings.

2.7.1. Interim measures performed subsequent to the Phase II Reports included soil cleanup and groundwater monitoring in the Western and Eastern Tank Farms as follows.

Soil Cleanup in the Western Tank Farm

Soil cleanup has been implemented as the Facility Owner decommissioned and removed above ground fuel storage tanks 1 through 10, and the oily water separator.

The soil cleanup was performed to meet the goals presented in the document *Soil Cleanup Levels for the Western Tank Farm* which was approved by DTSC on August 9, 2000. The soil work was performed in accordance with the DTSC approved *Final Work Plan for Fuel Storage Tank Inspections and Activities Associated with Aboveground Fuel Storage Tank Demolition* dated August 24, 2000.

The soil cleanup work was documented in the January 11, 2001 report *Aboveground Storage Tank Post Demolition Sampling for Tanks 1, 2 and 8*; the August 10, 2001 report *Aboveground Storage Tank Post Demolition Sampling for Tanks 3 through 7, 9 and 10*; and the May 16, 2001 report *Post Demolition Sampling Report, Oily Water Treatment System Area*. DTSC has reviewed the *Post Demolition Sampling Report, Oily Water Treatment System Area* report and conditionally accepted it September 5, 2001.

Groundwater Monitoring in the Western Tank Farm

In support of the Western Tank Farm interim measures, Respondent prepared and submitted a draft *Groundwater Monitoring Plan for the Western Tank Farm* in 2000. Revised and final versions of the *Groundwater Monitoring Plan for the Western Tank Farm* dated December 2001 and September 2002, respectively, were submitted to incorporate DTSC comments. The objective of this plan is to verify that the soil cleanup levels achieved through the Western Tank Farm Interim Measures are protective of groundwater goals.

Soil Cleanup in Eastern Tank Farm

PG&E submitted a *Work Plan for Activities Associated with Aboveground*

Fuel Storage Tank Demolition, Eastern and Central Tank Farms dated March 11, 2002 and *Addendum to Work Plan for Activities Associated with Aboveground Fuel Storage Tank Demolition, Eastern and Central Tank Farms* dated March 20, 2003. Soil cleanup has been implemented in the Eastern Tank Farm as the Facility Owner decommissioned and removed above ground fuel storage tanks 15 through 19. The soil cleanup in the Eastern Tank Farm was performed to meet the DTSC approved goals established for the Western Tank Farm soil cleanup. A report documenting the soil cleanup work performed at the Eastern Tank Farm is planned for submittal to DTSC.

2.7.2 Interim measures similar to those implemented for the Western and Eastern Tank Farm soils are planned for the Central Tank Farm area of the site as presented in the March 2002 *Work Plan* and March 2003 *Addendum for Activities Associated with Aboveground Fuel Storage Tank Demolition, Eastern and Central Tank Farms*.

2.8. Chemical constituents have migrated or may migrate from the Facility into the environment through the following pathways: Soil and Groundwater.

2.9. Based on the Phase II Reports findings, areas of the site warrant further evaluation at the present time. These areas constitute Areas of Concern (AOCs). The AOCs are located on the attached figures (Attachments 2A and 2B) and include the following:

<u>AOC IDENTIFICATION</u>	<u>DESCRIPTION</u>
A-GW	Area West of Western Tank Farm Groundwater
B-S/B-GW	Soil/Groundwater in Technician Shop Area
WTF-S	Western Tank Farm Soil
WTF-GW	Western Tank Farm Groundwater
CTF-S	Central Tank Farm Soil
CTF-GW	Central Tank Farm Groundwater
ETF-S	Eastern Tank Farm Soil
ETF-GW	Eastern Tank Farm Groundwater

In cooperation with DTSC's January 3, 2001 request for submittal of a soil and groundwater work plan, Respondent submitted a draft and revised draft *Work Plan to Assess Soil and Groundwater Impacts at the MLPP* in 2001. The final document *Work Plan to Assess Soil and Groundwater Impacts at the MLPP*, dated September 2002, was submitted to incorporate DTSC review comments and requests. The September 2002 work plan describes additional investigation to further evaluate the nature and extent of groundwater impact at MLPP.

As previously stated, PG&E has also submitted a work plan dated September 23, 2002 titled *Groundwater Monitoring Plan for Western Tank Farm*. The objective of this work plan is to provide confirmation monitoring data for the West Tank Farm area post-

interim measures.

2.10. There are additional AOCs at the site warranting further investigation but which cannot be assessed until the Facility Owner removes the plant equipment currently in place. These additional AOCs are shown on Attachment 2C and described below:

<u>AOC IDENTIFICATION</u>	<u>DESCRIPTION</u>
PB1-5S	Unit 1-5 Power Block Soil
PB1-5GW	Unit 1-5 Power Block Groundwater
PB6&7S	Unit 6 & 7 Power Block Soil
PB6&7GW	Unit 6 & 7 Power Block Groundwater

Power Blocks 1 through 5 are inactive. It is anticipated that Power Blocks 6 and 7 will continue to operate for approximately 20 years.

2.11. The Facility is located near the Pacific Ocean, Monterey Bay, Elkhorn Slough, Moss Landing State Beach, Salinas River State Beach, Bennett Slough, Moro Cojo Slough, Old Salinas River, and Salinas River; farms and farmhouse residences, commercial and industrial businesses (former refractory brick manufacturing plant), restaurants, stores and shops which serve the community and the local tourist industry, commercial and private boat and ship docks and related marine service enterprises.

3. PROJECT COORDINATOR

3.1. Within 14 days of the effective date of this Consent Agreement, DTSC and Respondent shall each designate a Project Coordinator and shall notify each other in writing of the Project Coordinator selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Agreement and for designating a person to act in his/her absence. All communications between Respondent and DTSC, and all documents, report approvals, and other correspondence concerning the activities performed pursuant to this Consent Agreement shall be directed through the Project Coordinators. Each party may change its Project Coordinator with at least seven days prior written notice.

4. WORK TO BE PERFORMED

4.1. Respondent agrees to perform the work required by this Consent Agreement in accordance with the applicable state and federal laws, their implementing regulations, and the applicable DTSC and the United States Environmental Protection Agency guidance documents.

4.2. Respondent shall proceed with work on the MLPP AOCs in a phased

fashion as agreed with DTSC staff and in coordination with the Facility Owner.

5. INTERIM MEASURES (IM)

5.1. Respondent shall evaluate available data and assess the need for interim measures. Interim measures shall be used whenever possible to control or abate immediate threats to human health and/or the environment, and to prevent and/or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated. Interim measures may be used at the MLPP site to minimize the spread of contaminants in media potentially present underneath large facility structures. These large structures are owned and operated by the Facility Owner, and the underlying media are only accessible by Respondent for assessment and remediation during a specific window of time – which starts with the structure removal and ends with initiation of construction of new units/facilities.

5.2. Interim measures for soils in the Central Tank Farm Area are planned as proposed in the March 2002 *Work Plan* and March 2003 *Addendum for Activities Associated with Aboveground Fuel Storage Tank Demolition, Eastern and Central Tank*. These interim measures are necessary to minimize the spread of contaminants potentially present beneath the above ground fuel storage tanks - which can only be accessed by Respondent during the window of time, which starts after the Facility Owner demolishes the tanks and ends when the Facility Owner initiates construction of new units/structures. Interim measures for soils at the Central and Eastern Tank Farm Areas will be implemented after Respondent submits the work plan, and in accordance with the Facility Owner's construction schedule.

5.3. If at any time Respondent identifies an immediate or potential threat to human health and/or the environment for which Respondent is responsible, discovers new releases of hazardous waste and/or hazardous waste constituents for which Respondent is responsible, or discovers new areas of concern not previously identified and for which Respondent is responsible, Respondent shall notify the DTSC Project Coordinator orally within 48 hours of discovery and notify DTSC in writing within 10 days of discovery summarizing the findings, including the immediacy and magnitude of the potential threat to human health and/or the environment.

5.4. If DTSC identifies an immediate or potential threat to human health and/or the environment for which Respondent is responsible, discovers new releases of hazardous waste and/or hazardous waste constituents for which Respondent is responsible, or discovers new areas of concern not previously identified and for which Respondent is responsible, DTSC will notify Respondent in writing. If DTSC determines that immediate action is needed, within 30 days of receiving DTSC's written request for immediate action, Respondent shall submit to DTSC for approval an IM Workplan that identifies Interim Measures that will mitigate the threat. As needed, the IM Workplan shall include a schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Measures Implementation contained in as Attachment 3.

If DTSC determines that immediate action is required, the DTSC Project Coordinator may orally authorize Respondent to act prior to receipt of the IM Workplan.

5.5. All IM Work plans shall ensure that the Interim Measures are designed to mitigate current or potential threats to human health and/or the environment, and should, to the extent practicable, be consistent with the objectives of, and contribute to the performance of, any remedy which may be required at the Facility.

5.6. Concurrent with the submission of an IM Workplan, if appropriate, as determined by DTSC, Respondent shall submit to DTSC a Health and Safety Plan in accordance with the Scope of Work for a Health and Safety Plan contained in Attachment 4. If applicable, as determined by the DTSC, existing Health and Safety Plans and/or amendments to existing Health and Safety Plans may be submitted to support the proposed IM.

5.7. Upon determining that an interim measure at an AOC has been satisfactorily completed and that interim corrective action goals have been achieved for such an AOC, DTSC shall issue to the Respondent a letter confirming that the interim measures are considered complete and have satisfactorily met the interim corrective action goals approved by DTSC for the respective AOC.

6. RCRA FACILITY INVESTIGATION (RFI)

6.1. Respondent shall investigate areas needing further characterization at the Facility for which Respondent is responsible.

For an AOC or group of AOCs where additional investigation is necessary or where a workplan for investigation has not been yet been prepared, within 60 days of a receiving a written request from DTSC for such AOC or group of AOCs, Respondent shall submit to DTSC a Workplan for a RCRA Facility Investigation ("RFI Workplan"). The RFI Workplan is subject to approval by DTSC and, as appropriate shall be developed in a manner consistent with the Scope of Work for a RCRA Facility Investigation contained in Attachment 5. DTSC will review the RFI Workplan for the AOC or group of AOCs and notify Respondent in writing of DTSC's approval or disapproval.

Respondent has submitted the *Work Plan to Assess Soil and Groundwater Impacts at the MLPP*, dated September 27, 2002, which incorporates DTSC comments and requests for additional investigation at MLPP.

6.2. As appropriate, as determined by DTSC, the RFI Workplan shall detail the methodology to: (1) gather data needed to make decisions on interim measures/ stabilization during the early phases of the RCRA Facility Investigation; (2) identify and characterize all sources of contamination; (3) define the nature, degree and extent of contamination; (4) define the rate of movement and direction of contamination flow; (5) characterize the potential pathways of contaminant migration; (6) identify actual or potential human and/or ecological receptors; and (7) support development of alternatives from which a corrective measure will be selected by DTSC. A specific

schedule for implementation of all activities shall be included in the RFI Workplan.

6.3. Respondent shall submit a RFI Report to DTSC for approval in accordance with a DTSC-approved RFI Workplan schedule. As appropriate, as determined by DTSC, the RFI Report shall be developed in a manner consistent with the Scope of Work for a RCRA Facility Investigation contained in Attachment 5. If there is a phased investigation, separate RFI Reports may be submitted to DTSC. DTSC will review the RFI Report(s) and notify Respondent in writing of DTSC's approval or disapproval.

6.4. Concurrent with the submission of a RFI Workplan, Respondent shall submit to DTSC a Health and Safety Plan in accordance with Attachment 4. If Workplans for both an IM and RFI are required by this Consent Agreement, Respondent may submit a single Health and Safety Plan that addresses the combined IM and RFI activities. If there is an existing Health and Safety Plan, Respondent may use the existing plan if applicable and/or submit a Health and Safety Plan Addendum for IM and/or RFI activities.

6.5. Respondent shall submit a RFI Summary Fact Sheet to DTSC that summarizes the findings from all phases of the RFI, or from groups of phases, as appropriate. The RFI Summary Fact Sheet shall be submitted to DTSC in accordance with the schedule contained in the approved RFI Workplan. DTSC will review the RFI Summary Fact Sheet and notify Respondent in writing of DTSC's approval or disapproval, including any comments and/or modifications. When DTSC approves the RFI Summary Fact Sheet, Respondent shall mail the approved RFI Summary Fact Sheet to all individuals on the Facility mailing list established pursuant to California Code Regulations, title 22, section 66271.9(c)(1)(D), within 15 calendar days of receipt of written approval.

6.6. Concurrent with the submission of a RFI Workplan, Respondent shall submit to DTSC for approval a Community Profile in accordance with Attachment 6 unless such a task has already been completed for the site. Based on the information provided in the Community Profile and any Supplement to the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, Respondent shall prepare a Public Participation Plan. If there is an existing Community Profile, Respondent may submit a Supplement to the Community Profile if necessary.

7. RISK ASSESSMENT

7.1. Risk assessments were performed on portions of the Facility as presented in the Phase II Reports. DTSC may request Respondent to conduct a Risk Assessment to evaluate potential human health risk and ecological risk and to establish site-specific corrective action objectives for other portions of the Facility, not previously addressed; or for portions of the facility where actions (e.g., interim measures) or data collection warrant a reevaluation of risks.

7.2. If DTSC determines that a Risk Assessment is required, Respondent shall submit to DTSC for approval a Risk Assessment Workplan within 60 days of receipt of DTSC's determination. Respondent shall submit to DTSC for approval a Risk

Assessment Report in accordance with DTSC-approved Risk Assessment Workplan schedule. The Risk Assessment Report may be submitted as part of a RFI Report or as a separate document.

8. CORRECTIVE MEASURES STUDY (CMS)

8.1. Respondent shall prepare a Corrective Measures Study, if contaminant concentrations exceed human health-based or ecologically-based corrective action objectives established by the DTSC-approved Risk Assessment Report if one is required under this Consent Agreement, or if DTSC otherwise determines that the contaminant releases pose a potential threat to human health or the environment. The CMS may be performed in a phased fashion for each AOC or group of AOCs which Respondent is addressing at that time.

8.2. Within 60 days of Respondent's receipt of a written request from DTSC, Respondent shall submit a CMS Workplan to DTSC. The CMS Workplan is subject to approval by DTSC and shall be developed in a manner consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 7.

8.3. The CMS Workplan shall detail the methodology for developing and evaluating potential corrective measures to remedy any contamination at the Facility. The CMS Workplan shall identify the potential corrective measures, including any innovative technologies that may be used for the containment, treatment, remediation, and/or disposal of contamination.

8.4. Respondent shall prepare treatability studies for all potential corrective measures that involve treatment except where Respondent can demonstrate to DTSC's satisfaction that they are not needed. The CMS Workplan shall include, at a minimum, a summary of the proposed treatability study including a conceptual design, a schedule for submitting a treatability study workplan, or Respondent's justification for not proposing a treatability study.

8.5. Respondent shall submit a CMS Report to DTSC for approval in accordance with DTSC-approved CMS Workplan schedule. The CMS Report shall be developed in a manner consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 7. DTSC will review the CMS Report and notify Respondent in writing of DTSC's approval or disapproval.

9. REMEDY SELECTION

* 9.1. DTSC will provide the public with an opportunity to review and comment on the final draft of the any CMS Report, DTSC's proposed corrective measures for the AOC or AOCs, and DTSC's justification for selection of such corrective measures. Depending on the level of community concern, DTSC may conduct a public hearing to obtain comments.

9.2. Following the public comment period, DTSC may select final corrective

measures or require Respondent to revise the CMS Report and/or perform additional corrective measures studies.

9.3. DTSC will notify Respondent of the final corrective measures selected by DTSC in the Final Decision and Response to Comments. The notification will include DTSC's reasons for selecting the corrective measures.

10. CORRECTIVE MEASURES IMPLEMENTATION (CMI)

10.1. Within 60 days of Respondent's receipt of notification of DTSC's selection of the corrective measures for an AOC or group of AOCs, Respondent shall submit to DTSC a Corrective Measures Implementation (CMI) Workplan. The CMI Workplan is subject to approval by DTSC and shall be developed in a manner consistent with the Scope of Work for Corrective Measures Implementation contained in Attachment 8.

10.2. Concurrent with the submission of a CMI Workplan, Respondent shall submit to DTSC a Health and Safety Plan in accordance with Attachment 4.

10.3. The CMI program shall be designed to facilitate the design, construction, operation, maintenance, and monitoring of corrective measures at the Facility. In accordance with the schedule contained in the approved CMI Workplan, Respondent shall submit to DTSC the documents listed below, to the extent applicable. These documents shall be developed in a manner consistent with the Scope of Work for Corrective Measures Implementation contained in Attachment 8.

- o Operation and Maintenance Plan
- o Draft Plans and Specifications
- o Final Plans and Specifications
- o Construction Workplan
- o Construction Completion Report
- o Corrective Measures Completion Report

10.4. DTSC will review all required CMI documents and notify Respondent in writing of DTSC's approval or disapproval.

11. CALIFORNIA ENVIRONMENTAL QUALITY ACT

11. DTSC must comply with the California Environmental Quality Act (CEQA) insofar as activities required by this Consent Agreement are projects subject to CEQA. Respondent shall provide all information necessary to facilitate any CEQA analysis. DTSC will make an initial determination regarding the applicability of CEQA. If the activities are not exempt from CEQA, DTSC will conduct an Initial Study. Based on the results of the Initial Study, DTSC will determine if a Negative Declaration or an Environmental Impact Report (EIR) should be prepared. DTSC will prepare and process any such Negative Declaration. However, should DTSC determine that an EIR

is necessary, such an EIR would be prepared under a separate agreement between DTSC and Respondent.

12. SUBMITTALS

12.1. Any report or other document submitted by Respondent pursuant to this Consent Agreement shall be signed and certified by the project coordinator, a responsible corporate officer, or a duly authorized representative.

12.2. The certification required by paragraph 12.1 above, shall be in the following form:

I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those portions of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared at my direction in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted.

Signature: _____
Name: _____
Title: _____
Date: _____

12.3. Respondent shall provide two copies of all documents, including but not limited to, work plans, reports, and correspondence, to DTSC. Submittals specifically exempted from this copy requirement are all correspondence of less than 15 pages, for which one copy is required. When two copies are required, one copy is to be provided to the current Project Coordinator. One copy is to be sent to:

Brian Lewis
Geological Services Unit
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826-3200
Attention: Will Rowe (or current Project Geologist)

12.3.1. Respondent shall additionally provide one copy of all documents in excess of 15 pages, including but not limited to, work plans, reports, and correspondence, to

Bruce Welden (or current Project Coordinator)
County of Monterey
Division of Environmental Health
1270 Natividad Road

Salinas, California 93906

and

Harvey Packard
California Regional Water Quality Control Board
Central Coast Region
81 Higuera Street, Suite 200
San Luis Obispo, California 93401-5427
David Schwartzbart (or current Project Manager)

12.4. Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices, or other submissions relating to this Consent Agreement shall be in writing and shall be sent to the current Project Coordinators.

12.5. Any DTSC-approved workplan, report, specification, or schedule required under this Consent Agreement shall be deemed incorporated into this Consent Agreement.

12.6. Verbal advice, suggestions, or comments given by DTSC representatives will not constitute an official approval or decision.

13. PROPOSED CONTRACTOR/CONSULTANT

13. All work performed pursuant to this Consent Agreement shall be under the direction and supervision of a professional engineer or registered geologist, registered in California, with expertise in hazardous waste site cleanup. Respondent's contractor or consultant shall have the technical expertise sufficient to fulfill his or her responsibilities. Within 14 days of the effective date of this Consent Agreement, Respondent shall notify DTSC Project Coordinator in writing of the name, title, and qualifications of the professional engineer or registered geologist and of any contractors or consultants and their personnel to be used in carrying out the terms of this Consent Agreement.

14. ADDITIONAL WORK

14. DTSC may determine or Respondent may propose that certain tasks, including investigatory work, engineering evaluation, or procedure/methodology modifications are necessary in addition to, or in lieu of, the tasks and deliverables included in any part of DTSC-approved work plans. DTSC shall request in writing that Respondent perform the additional work and shall specify the basis and reasons for DTSC's determination that the additional work is necessary. Within 30 days after the receipt of such determination, Respondent may confer with DTSC to discuss the additional work DTSC has requested. If required by DTSC, Respondent shall submit to DTSC a workplan for the additional work. Such workplan shall be submitted to DTSC

within 30 days of receipt of DTSC's determination or according to an alternate schedule established by DTSC. Upon approval of a workplan, Respondent shall implement it in accordance with the provisions and schedule contained therein. The need for, and disputes concerning, additional work are subject to the dispute resolution procedures specified in this Consent Agreement.

15. QUALITY ASSURANCE

15.1. All sampling and analyses performed by Respondent under this Consent Agreement shall follow applicable DTSC and U.S. EPA guidance for sampling and analysis. Work plans shall contain quality assurance/quality control and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the approved work plans must be approved by DTSC prior to implementation, must be documented, including reasons for the deviations, and must be reported in the applicable report.

15.2. The names, addresses, and telephone numbers of the California State certified analytical laboratories Respondent proposes to use must be specified in the applicable work plans.

16. SAMPLING AND DATA/DOCUMENT AVAILABILITY

16.1. Respondent shall submit to DTSC upon request the results of all sampling and/or tests or other data generated by its employees, agents, consultants, or contractors pursuant to this Consent Agreement.

16.2. Respondent shall notify DTSC in writing at least seven days prior to beginning each separate phase of field work approved under any workplan required by this Consent Agreement. If Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from DTSC Project Coordinator or, if the Project Coordinator is unavailable, his/her Branch Chief, to commence such activities immediately.

16.3. At the request of DTSC, Respondent shall provide or allow DTSC or its authorized representative to take split or duplicate samples of all samples collected by Respondent pursuant to this Consent Agreement. Similarly, at the request of Respondent, DTSC shall allow Respondent or its authorized representative to take split or duplicate samples of all samples collected by DTSC under this Consent Agreement.

17. ACCESS

17. Subject to Respondent's security and safety procedures, Respondent agrees provide access for DTSC and its representatives at all reasonable times to the Substation Property owned by the Respondent. Respondent agrees to seek from the Facility Owner access for DTSC and its representatives at all reasonable times to the

Facility and any off-site property to which access is required for implementation of this Consent Agreement. Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Agreement and that are within the possession or under the control of Respondent or its contractors or consultants.

18. RECORD PRESERVATION

18.1. Respondent shall retain, during the pendency of this Consent Agreement and for a minimum of six years after its termination, all data, records, and documents that relate in any way to the performance of this Consent Agreement or to hazardous waste management and/or disposal at the Facility. Respondent shall notify DTSC in writing 90 days prior to the destruction of any such records, and shall provide DTSC with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Consent Agreement and shall be addressed to:

James M. Pappas, P.E., Chief
Northern California Permitting and Corrective Action Branch
Hazardous Waste Management Program
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

18.2. If Respondent retains or employs any agent, consultant, or contractor for the purpose of carrying out the terms of this Consent Agreement, Respondent will require any such agents, consultants, or contractors to provide Respondent a copy of all documents produced pursuant to this Consent Agreement.

18.3. All documents pertaining to this Consent Agreement shall be stored at a location agreed to by the parties, to afford easy access by DTSC and its representatives.

19. DISPUTE RESOLUTION

19.1. The parties agree to use their best efforts to resolve all disputes informally. The parties agree that the procedures contained in this section are the sole administrative procedures for resolving disputes arising under this Consent Agreement. If Respondent fails to follow the procedures contained in this section, it shall have waived its right to further consideration of the disputed issue.

19.2. If Respondent disagrees with any written decision by DTSC pursuant to this Consent Agreement, Respondent's Project Coordinator shall orally notify DTSC's Project Coordinator of the dispute. The Project Coordinators shall attempt to resolve the dispute informally.

19.3. If the Project Coordinators cannot resolve the dispute informally, Respondent may pursue the matter formally by placing its objection in writing. Respondent's written objection must be forwarded to James M. Pappas, P.E, Chief, Northern California Permitting and Corrective Action Branch, Hazardous Waste Management Program, Department of Toxic Substances Control, with a copy to DTSC's Project Coordinator. The written objection must be mailed to the Branch Chief within 14 days of Respondent's receipt of DTSC's written decision. Respondent's written objection must set forth the specific points of the dispute and the basis for Respondent's position.

19.4. DTSC and Respondent shall have 14 days from DTSC's receipt of Respondent's written objection to resolve the dispute through formal discussions. This period may be extended by DTSC for good cause. During such period, Respondent may meet or confer with DTSC to discuss the dispute.

19.5. After the formal discussion period, DTSC will provide Respondent with its written decision on the dispute. DTSC's written decision will reflect any agreements reached during the formal discussion period and be signed by the Branch Chief or his/her designee.

19.6. During the pendency of all dispute resolution procedures set forth above, the time periods for completion of work required under this Consent Agreement that are affected by such dispute shall be extended for a period of time not to exceed the actual time taken to resolve the dispute. The existence of a dispute shall not excuse, toll, or suspend any other compliance obligation or deadline required pursuant to this Consent Agreement.

20. RESERVATION OF RIGHTS

20.1. DTSC reserves all of its statutory and regulatory powers, authorities, rights, and remedies, which may pertain to Respondent's failure to comply with any of the requirements of this Consent Agreement. Respondent reserves all of its statutory and regulatory rights, defenses and remedies, as they may arise under this Consent Agreement. This Consent Agreement shall not be construed as a covenant not to sue, release, waiver, or limitation on any powers, authorities, rights, or remedies, civil or criminal, that DTSC or Respondent may have under any laws, regulations or common law.

20.2. DTSC reserves the right to disapprove of work performed by Respondent pursuant to this Consent Agreement and to request that Respondent perform additional tasks.

20.3. DTSC reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and/or remedial actions it deems necessary to protect human health and/or the environment. DTSC may exercise its authority under any applicable state or federal law or regulation to undertake response actions at any time. DTSC reserves its right to seek reimbursement from Respondent for costs incurred by the State of California with

respect to such actions. DTSC will notify Respondent in writing as soon as practicable regarding the decision to perform any work described in this section.

20.4. If DTSC determines that activities in compliance or noncompliance with this Consent Agreement have caused or may cause a release of hazardous waste and/or hazardous waste constituents, or a threat to human health and/or the environment, or that Respondent is not capable of undertaking any of the work required, DTSC may order Respondent to stop further implementation of this Consent Agreement for such period of time as DTSC determines may be needed to abate any such release or threat and/or to undertake any action which DTSC determines is necessary to abate such release or threat. The deadlines for any actions required of Respondent under this Consent Agreement affected by the order to stop work shall be extended to take into account DTSC's actions.

20.5. This Consent Agreement is not intended to be nor shall it be construed to be a permit. This Consent Agreement is not a substitute for, and does not preclude DTSC from requiring, any hazardous waste facility permit, post closure permit, closure plan or post closure plan. The parties acknowledge and agree that DTSC's approval of any workplan, plan, and/or specification does not constitute a warranty or representation that the work plans, plans, and/or specifications will achieve the required cleanup or performance standards. Compliance by Respondent with the terms of this Consent Agreement shall not relieve Respondent of its obligations to comply with the Health and Safety Code or any other applicable local, state, or federal law or regulation.

21. OTHER CLAIMS

21.1. Except as provided in this Consent Agreement, nothing in this Consent Agreement shall constitute or be construed as a release by DTSC or Respondent from any claim, cause of action, or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken or migrating from the Facility.

22. COMPLIANCE WITH WASTE DISCHARGE REQUIREMENTS

22. Respondent shall comply with all applicable waste discharge requirements issued by the State Water Resources Control Board or a California Regional Water Quality Control Board.

23. OTHER APPLICABLE LAWS

23. All actions required by this Consent Agreement shall be conducted in accordance with the requirements of all local, state, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals

necessary under such laws and regulations.

24. REIMBURSEMENT OF DTSC'S COSTS

24.1. Respondent shall pay DTSC's costs incurred in the preparation and implementation of this Consent Agreement including costs incurred prior to the effective date of this Consent Agreement, as provided by and in accordance with the procedures required by Chapter 6.66 of the California Health and Safety Code (commencing with section 25269).

24.2. An estimate of DTSC's costs is provided as Attachment 9 showing the amount of \$ 65,120.00 for Fiscal Year July 2003 – June 2004. It is understood by the parties that this amount is only a cost estimate for the activities shown on Attachment 9 and it may differ from the actual costs incurred by DTSC in overseeing these activities or in implementing this Consent Agreement. DTSC will provide additional cost estimates to Respondent as the work progresses under the Consent Agreement. The estimate of DTSC's oversight cost shown in Attachment 9 does not cover the entire corrective action process.

24.3. Respondent shall make an advance payment to DTSC in the amount of \$16,300.00 within 30 days of the effective date of this Consent Agreement. If the advance payment exceeds DTSC's costs, DTSC will refund the balance within 60 days after the execution of the Acknowledgment of Satisfaction pursuant to Section 26 of this Consent Agreement.

24.4. DTSC will provide Respondent with a billing statement at least quarterly, which will include the name(s) of the employee(s), identification of the activities, the amount of time spent on each activity, and the hourly rate charged. If Respondent does not pay an invoice within 60 days of the date of the billing statement, the amount is subject to interest as provided by Health and Safety Code section 25360.1.

24.5. DTSC will retain all costs records associated with the work performed under this Consent Agreement as required by state law. DTSC will make all documents that support DTSC's cost determination available for inspection upon request, as provided by the Public Records Act.

24.6. Any dispute concerning DTSC's costs incurred pursuant to this Consent Agreement is subject to the Dispute Resolution provision of this Consent Agreement and the dispute resolution procedures as established pursuant to Health and Safety Code section 25269.2. DTSC reserves its right to recover unpaid costs under applicable state and federal laws.

24.7. All payments shall be made within 30 days of the date of the billing statement by check payable to the Department of Toxic Substances Control and shall be sent to:

Accounting Unit
Department of Toxic Substances Control

P. O. Box 806
Sacramento, California 95812-0806

All checks shall reference the name of the Facility, the Respondent's name and address, and the docket number of this Consent Agreement. Copies of all checks and letters transmitting such checks shall be sent to DTSC's Project Coordinator.

25. MODIFICATION

25.1. This Consent Agreement may be modified by mutual agreement of the parties. Any agreed modification shall be in writing, shall be signed by both parties, shall have as its effective date the date on which it is signed by all the parties, and shall be deemed incorporated into this Consent Agreement.

25.2. Any requests for revision of an approved workplan requirement must be in writing. Such requests must be timely and provide justification for any proposed workplan revision. DTSC has no obligation to approve such requests, but if it does so, such approval will be in writing and signed by the Chief, Northern California Permitting and Corrective Action Branch, Hazardous Waste Management Program, Department of Toxic Substances Control, or his or her designee. Any approved workplan revision shall be incorporated by reference into this Consent Agreement.

26. TERMINATION AND SATISFACTION

26.1. The provisions of this Consent Agreement shall be deemed satisfied upon the execution by both parties of an Acknowledgment of Satisfaction (Acknowledgment). DTSC will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to the satisfaction of DTSC that the terms of this Consent Agreement including payment of DTSC's costs have been satisfactorily completed. The Acknowledgment will affirm Respondent's continuing obligation to preserve all records after the rest of the Consent Agreement is satisfactorily completed.

26.2. A permit modification may be required for termination of corrective action.

27. EFFECTIVE DATE

27. The effective date of this Consent Agreement shall be the date on which this Consent Agreement is signed by all the parties. Except as otherwise specified, "days" means calendar days.

28. SIGNATORIES

28. Each undersigned representative certifies that he or she is fully authorized to enter into this Consent Agreement.

DATE: 9-22-03

BY: //Original signed by//

Name (print): Robert L. Harris

Title: Vice President - Environmental Affairs
Pacific Gas and Electric Company

DATE: 9/30/03

BY: //Original signed by//

Mohinder S. Sandhu, P.E., Chief

Standardized Permitting and Corrective Action Branch
Department of Toxic Substances Control

List of Attachments

Attachment 1	Historical SWMU Summary Table
Attachment 2A	Areas of Concern, Moss Landing Power Plant, Western and Central Areas
Attachment 2B	Areas of Concern, Moss Landing Power Plant, Eastern Area
Attachment 2C	Areas of Concern, Moss Landing Power Plant, AOCs Inaccessible Until Plant Removals by Facility Owner
Attachment 3	Interim Measure
Attachment 4	Health and Safety Plan
Attachment 5	Facility Investigation
Attachment 6	Community Profile
Attachment 7	Corrective Measure Study
Attachment 8	Corrective Measure Implementation
Attachment 9	Cost Estimate July 2003 – June 2004

ATTACHMENT 1
SWMUs With Corrective Action Completed
Summary Table
Moss Landing Power Plant
Monterey, California

SWMU Unit	Description	Identification Source	History	Status
4.1	Air Preheater and Boiler Fireside Wash Ponds	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.2	Boiler Chemical Cleaning Waste Pond	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.3	Oily Water Treatment System	RFA Report; Kearney and SAIC. 1986.	RFI and interim measures (soil removal) performed and results summarized in RFI report submitted 1/10/92. No future action required after RFI.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.4	Oil Sludge Pond	RFA Report; Kearney and SAIC. 1986.	PG&E closed unit.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.5	Units 1 through 5 Demineralizer Regeneration Neutralization Tank	RFA Report; Kearney and SAIC. 1986.	RFI performed and results summarized in RFI report submitted 1/10/92. No further action required after RFI.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.6	Units 6 and 7 Demineralizer Regeneration Neutralization Tank	RFA Report; Kearney and SAIC. 1986.	RFI performed and results summarized in RFI report submitted 1/10/92. No further action required after RFI.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.7	Asbestos Waste Storage Van	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.8	Inactive Drum Storage Area	RFA Report; Kearney and SAIC. 1986.	RFI performed and results summarized in RFI report submitted 1/10/92. CMS required; CMS Workplan submitted 10/23/96, soil removal performed; Corrective Measures Completion Report submitted 9/23/97. DTSC approved no further action remedy on 8/19/98 after CEQA and 30-day public comment period.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.9	Full Hazardous Waste Drum	RFA Report; Kearney	No further action after RFA.	Corrective action requirements terminated per

SWMU= Solid Waste Management Unit Study

RFA = RCRA Facility Assessment

RFI = RCRA Facility Investigation

CMS = Corrective Measures

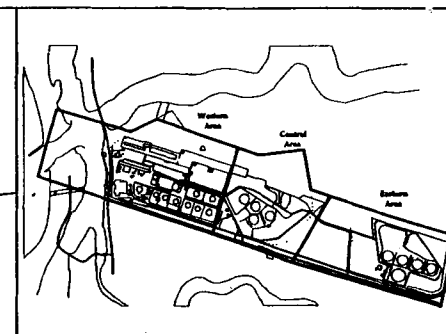
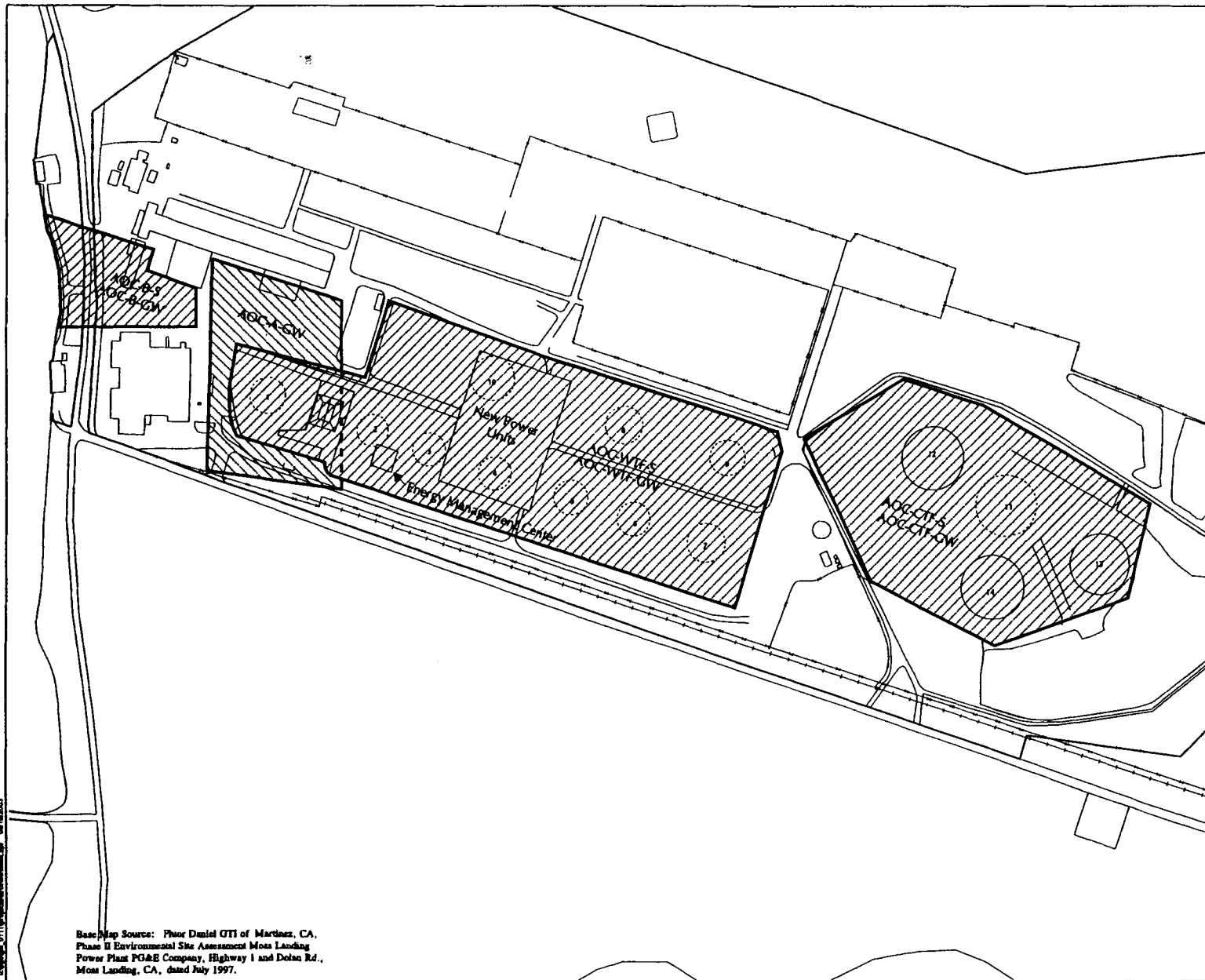
SWMU Unit	Description	Identification Source	History	Status
	Storage Area	and SAIC. 1986.		Hazardous Waste Permit Modification dated 8/19/98.
4.10	Empty Hazardous Waste Drum Storage Area	RFA Report; Kearney and SAIC. 1986.	RFI performed and results summarized in RFI report submitted 1/10/92. No further action required after RFI.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.11	Construction Waste Landfill	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.12	Inactive Construction Waste Landfill	RFA Report; Kearney and SAIC. 1986.	EPA requested additional background data collection after RFA. Additional data submitted to EPA and DHS in 1/26/89 "Report of Current Conditions for Solid Waste Management Units 4.12, 4.16 and 4.17". No further action was required after this report submittal.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.13	Trash Incinerator	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.14	Septic Leach Field	RFA Report; Kearney and SAIC. 1986.	RFI performed and results summarized in RFI report submitted 1/10/92. No further action required after RFI.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.15	Primary Regulator Gas Oil Tank	RFA Report; Kearney and SAIC. 1986.	No further action after RFA.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.16	Unlined Collection Drainage Pit	PG&E identified SWMU (after RFA).	EPA requested additional background data collection . Additional data submitted to EPA and DHS in 1/26/89 "Report of Current Conditions for Solid Waste Management Units 4.12, 4.16 and 4.17". No further action was required after this report submittal.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.
4.17	Buried Asbestos Insulation	PG&E identified SWMU (after RFA).	EPA requested additional background data collection . Additional data submitted to EPA and DHS in 1/26/89 "Report of Current Conditions for Solid Waste Management Units 4.12, 4.16 and 4.17". No further action was required after this report submittal.	Corrective action requirements terminated per Hazardous Waste Permit Modification dated 8/19/98.

SWMU= Solid Waste Management Unit Study

RFA = RCRA Facility Assessment

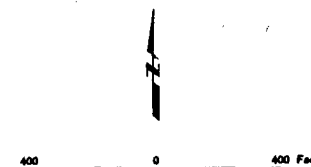
RFI = RCRA Facility Investigation

CMS = Corrective Measures



Explanation

- ⑦ Aboveground fuel storage tank
(Dashed where removed, as of 5/03)
- Groundwater Areas of Concern (AOCs)
- Groundwater and soil Areas of Concern

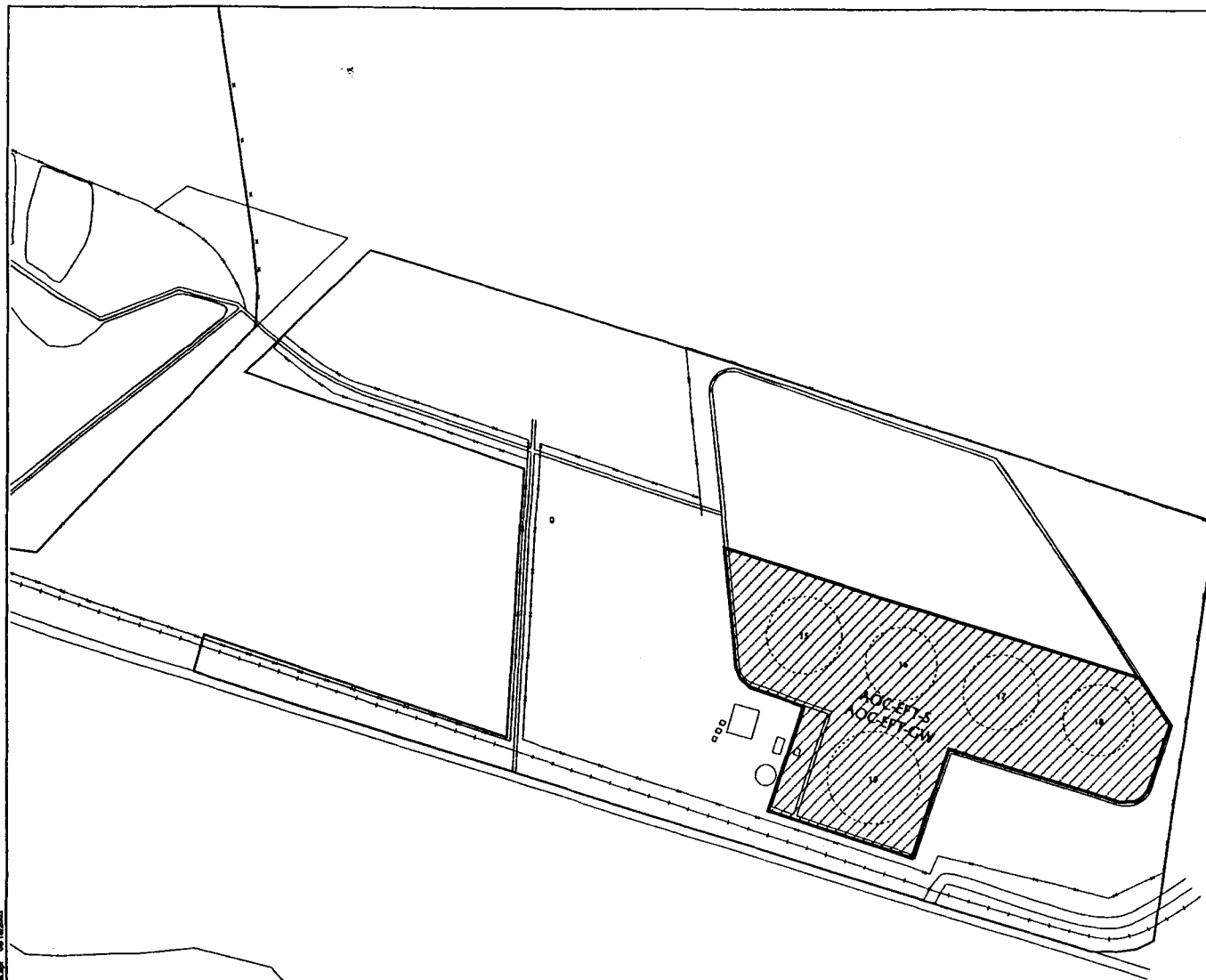


Areas of Concern
Moss Landing Power Plant
Western and Central Area

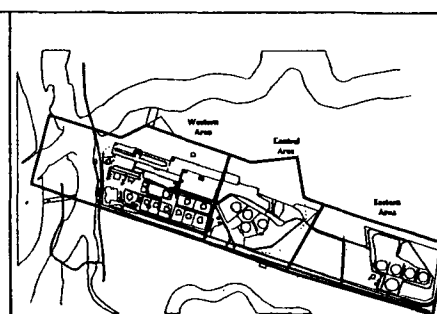
Base Map Source: Prior Daniel GTI of Martinez, CA,
Phase II Environmental Site Assessment Moss Landing
Power Plant PG&E Company, Highway 1 and Delan Rd.,
Moss Landing, CA, dated July 1997.

LFR
LEVINE • FRICKE

Attachment 2A

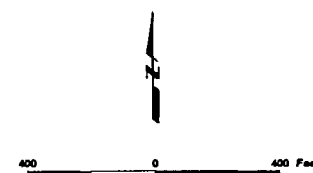


Base Map Source: Fluor Daniel GTI of Martinez, CA,
Phase II Environmental Site Assessment Moss Landing
Power Plant PG&E Company, Highway 1 and Dolan Rd.,
Moss Landing, CA, dated July 1997.



Explanation

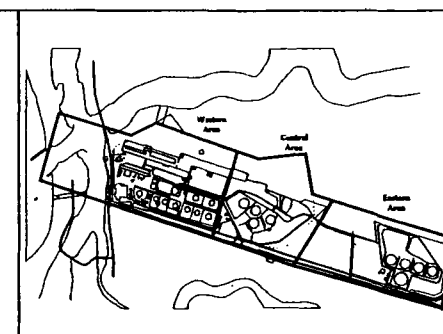
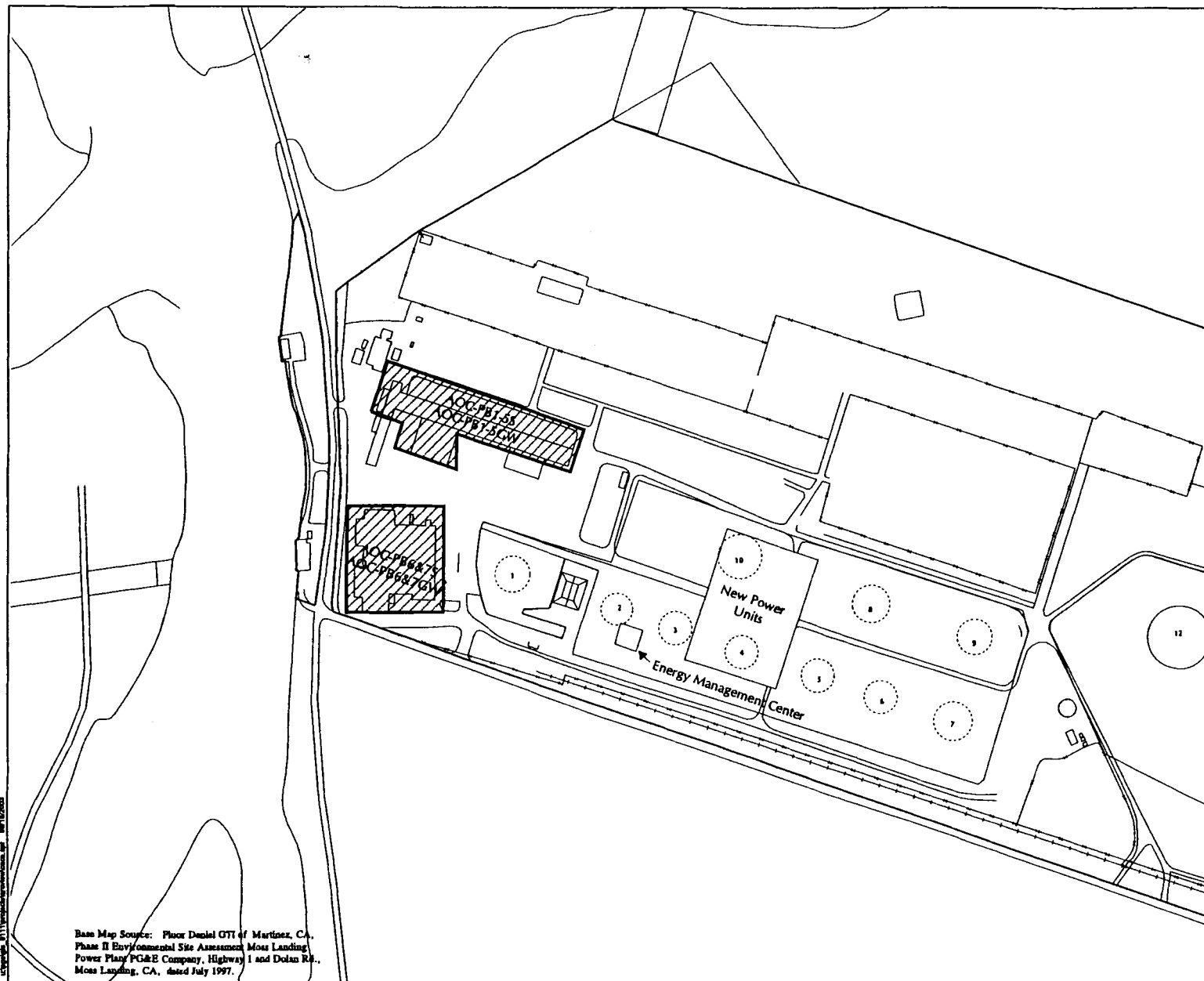
- 15 Aboveground fuel storage tank
(Dashed where removed, as of 5/03)
- Groundwater Areas of Concern (AOCs)
- Groundwater and soil Areas of Concern



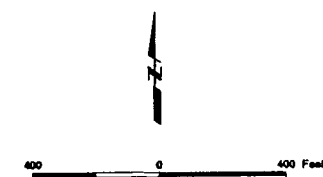
Areas of Concern
Moss Landing Power Plant
Eastern Area

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Attachment 2B



- Explanation**
- ⑩ Aboveground fuel storage tank
 (Dashed where removed, as of 5/03)
 - ▨ Groundwater Areas of Concern (AOCs)
 - ▨ Groundwater and soil Areas of Concern



Areas of Concern
Moss Landing Power Plant
AOCs Inaccessible Until Plant
Removals by Facility Owner

LFR
 LEVINE • FRICKE

Attachment 2C

ATTACHMENT 3

SCOPE OF WORK FOR INTERIM MEASURES IMPLEMENTATION

Purpose

Interim measures are actions to control and/or eliminate releases of hazardous waste and/or hazardous constituents from a facility prior to the implementation of a final corrective measure. Interim measures must be used whenever possible to achieve the goal of stabilization which is to control or abate threats to human health and/or the environment, and to prevent or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

Scope

The documents required for Interim Measures (IM) are, unless the Department of Toxic Substances Control (DTSC) specifies otherwise, an IM Workplan, an Operation and Maintenance Plan and IM Plans and Specifications. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If the Owner/Operator or Respondents can justify, to the satisfaction of DTSC, that a plan or portions thereof are not needed in the given site specific situation, then DTSC may waive that requirement.

The scope and substance of interim measures should be focused to fit the site specific situation and be balanced against the need to take quick action.

DTSC may require the Owner/Operator or Respondents to conduct additional studies beyond what is discussed in the SOWs in order to support the IM program. The Owner/Operator or Respondents will furnish all personnel, materials and services necessary to conduct the additional tasks.

A. Interim Measures Workplan

The Owner/Operator or Respondents shall prepare an IM Workplan that evaluates interim measure options and clearly describes the proposed interim measure, the key components or elements that are needed, describes the designer's vision of the interim measure in the form of conceptual drawings and schematics, and includes procedures and schedules for implementing the interim measure(s).

The IM Workplan must be approved by the DTSC prior to implementation. The IM Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary of the project.

2. Conceptual Model of Contaminant Migration

It is important to know where the contaminants are and to understand how they are moving before an adequate interim measure can be developed. To address this critical question, the Owner/Operator or Respondents must present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to ground water, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document.

3. Evaluation of Interim Measure Alternatives

List, describe and evaluate interim measure alternatives that have the potential to stabilize the facility. Propose interim measures for implementation and provide rationale for the selection. Document the reasons for excluding any interim measure alternatives.

4. Description of Interim Measures

Qualitatively describe what the proposed interim measure is supposed to do and how it will function at the facility.

5. Data Sufficiency

Review existing data needed to support the design effort and establish whether there are sufficient accurate data available for this purpose. The Owner/Operator or Respondents must summarize the assessment findings and specify any additional data needed to complete the interim measure design. DTSC may require or the Owner/Operator or Respondents may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the

additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans must be included in the project schedule.

6. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will direct the interim measure design and implementation effort (including contractor personnel).

7. Project Schedule

The project schedule must specify all significant steps in the process, when any key documents (e.g., plans and specifications, operation and maintenance plan) are to be submitted to DTSC and when the interim measure is to be implemented.

8. Design Basis

Discuss the process and methods used to design all major components of the interim measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.

9. Conceptual Process/Schematic Diagrams

10. Site Plan Showing Preliminary Plant Layout and/or Treatment Area

11. Tables Listing Number and Type of Major Components with Approximate Dimensions

12. Tables Giving Preliminary Mass Balances

13. Site Safety and Security Provisions (e.g., fences, fire control, etc.)

14. Waste Management Practices

Describe the wastes generated by the construction of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

15. Required Permits

List and describe the permits needed to construct the interim measure. Indicate on the project schedule when the permit applications will be submitted to the

applicable agencies and an estimate of the permit issuance date.

16. Sampling and Monitoring

Sampling and monitoring activities may be needed for design and during construction of the interim measure. If sampling activities are necessary, the IM Workplan must include a complete sampling and analysis section which specifies at a minimum the following information:

- a. Description and purpose of monitoring tasks
- b. Data quality objectives
- c. Analytical test methods and detection limits
- d. Name of analytical laboratory
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment
- g. Field quality control procedures:
 - duplicates (10% of all field samples)
 - blanks (field, equipment, etc.)
 - equipment calibration and maintenance
 - equipment decontamination
 - sample containers
 - sample preservation
 - sample holding times (must be specified)
 - sample packaging and shipment
 - sample documentation (field notebooks, sample labeling, etc.);
 - chain of custody
- h. Criteria for data acceptance and rejection
- i. Schedule of monitoring frequency

The Owner/Operator or Respondents shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

17. Appendices, including the following:

- Design Data-Tabulations of significant data used in the design effort
- Equations-List and describe the source of major equations used in the design process
- Sample Calculations-Present and explain one example calculation for significant calculations
- Laboratory or Field Test Results

B. Interim Measures Operation and Maintenance Plan

The Owner/Operator or Respondents shall prepare an Interim Measures Operation and Maintenance (O&M) Plan that includes a strategy and procedures for performing operations, maintenance, and monitoring of the interim measure(s). An Interim Measures Operation and Maintenance Plan shall be submitted to DTSC simultaneously with the Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

1. Purpose/Approach

Describe the purpose of the document and provide a summary of the project.

2. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will operate and maintain the interim measure(s) (including contractor personnel).

3. System Description

Describe the interim measure and identify significant equipment.

4. Personnel Training

Describe the training process for O&M personnel. The Owner/Operator or Respondents shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

5. Start-Up Procedures

Describe system start-up procedures including any operational testing.

6. Operation and Maintenance Procedures

Describe normal operation and maintenance procedures including:

- a. Description of tasks for operation
- b. Description of tasks for maintenance

- c. Description of prescribed treatment or operation condition
 - d. Schedule showing frequency of each O&M task
7. **Replacement schedule for equipment and installed components.**

8. **Waste Management Practices**

Describe the wastes generated by operation of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

9. **Sampling and Monitoring**

Sampling and monitoring activities may be needed for effective operation and maintenance of the interim measure. If sampling activities are necessary, the O&M plan must include a complete sampling and analysis section which specifies at a minimum the following information:

- a. Description and purpose of monitoring tasks;
- b. Data quality objectives;
- c. Analytical test methods and detection limits;
- d. Name of analytical laboratory;
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment;
- g. Field quality control procedures:

- Duplicates (10% of all field samples)
- Blanks (field, equipment, etc.)
- Equipment calibration and maintenance
- Equipment decontamination
- Sample containers
- Sample preservation
- Sample holding times (must be specified)
- Sample packaging and shipment
- Sample documentation (field notebooks, sample labeling, etc.)
- Chain of custody

- h. Criteria for data acceptance and rejection
- i. Schedule of monitoring frequency

The Owner/Operator or Respondents shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

10. O&M Contingency Procedures:

- a. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures.
- b. Should the interim measure suffer complete failure, specify alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and/or the environment or exceed cleanup standards.
- c. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the interim measure (includes emergency situations), the Owner/Operator or Respondents will orally notify DTSC within 24 hours of the event and will notify DTSC in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and the environment.

11. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The O&M Plan shall specify that the Owner/Operator or Respondents collect and maintain the following information.

- a. Progress Report Information:
 - Work Accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.)
 - Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.)
- b. Monitoring and laboratory data
- c. Records of operating costs

- d. Personnel, maintenance and inspection records

DTSC may require that the Owner/Operator or Respondents submit additional reports that evaluate the effectiveness of the interim measure in meeting the stabilization goal.

C. Interim Measures Plans and Specifications

[Note - The decision to require the submittal of plans and specifications should be based on the site specific situation. The requirement for plans and specifications should be balanced against the need to quickly implement interim measures at a facility.]

The Owner/Operator or Respondents shall prepare Plans and Specifications for the interim measure that are based on the conceptual design but include additional detail. The Plans and Specifications shall be submitted to DTSC simultaneously with the Operation and Maintenance Plan. The design package must include drawings and specifications needed to construct the interim measure. Depending on the nature of the interim measure, many different types of drawings and specifications may be needed. The following are some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to DTSC, the Owner/Operator or Respondents shall:

- a. Proofread the specifications for accuracy and consistency with the conceptual design
- b. Coordinate and cross-check the specifications and drawings

ATTACHMENT 4

SCOPE OF WORK FOR HEALTH AND SAFETY PLAN

The Department of Toxic Substances Control (Department) may require that the Owner/Operator or Respondent prepare a Health and Safety Plan for any corrective action field activity (e.g., soil or ground water sampling, drilling, construction, operation and maintenance of a treatment system, etc.). The Health and Safety Plan must, at a minimum, include the following elements:

1. Objectives

Describe the goals and objectives of the Health and Safety Plan (must apply to on-site personnel and visitors). The Health and Safety Plan must be consistent with the facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), all state and local regulations and other Department guidance as provided.

2. Hazard Assessment

List and describe the potentially hazardous substances that could be encountered by field personnel during field activities.

Discuss the following:

- Inhalation Hazards
- Dermal Exposure
- Ingestion Hazards
- Physical Hazards
- Overall Hazard Rating

Include a table that, at a minimum, lists the following:

- Known contaminants
- Highest observed concentration
- Media
- Symptoms/effects of acute exposure

3. Personal Protection/Monitoring Equipment

For each field task, describe personal protection levels and identify all monitoring equipment.

Describe any action levels and corresponding response actions (i.e., when will levels of safety be upgraded).

Describe decontamination procedures and areas.

4. Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a facility map showing emergency station locations (first aid, eye wash areas, etc.).

ATTACHMENT 5

SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION WORKPLAN AND REPORT

A. Facility Investigation Workplan (Workplan).

The Workplan shall define, where applicable the following procedures necessary to:

- Gather all necessary data to determine where interim measures are needed and to support the use of interim measures to address immediate threats to human health and/or the environment, to prevent or minimize the spread of contaminants, to control sources of contamination and to accelerate the corrective action process (required for all releases);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any ground water contamination in and around the facility (only required for releases to ground water);
- Characterize the geology and hydrogeology in and around the facility (only required for releases to ground water and possibly for releases to soil);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil contamination in and around the facility (only required for releases to soil);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil gas contamination in and around the facility (may be required for releases to ground water and/or soil depending on the circumstances);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any surface water contamination (includes surface water sediments) at the facility (only required for releases to surface water);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any air releases at the facility (only required for air releases);
- Characterize any potential sources of contamination (required for all releases);

- Characterize the potential pathways of contaminant migration (required for all releases);
- Identify any actual or potential receptors (required for all releases);
- Gather all data to support a risk and/or ecological assessment (if required);
- Gather all necessary data to support the Corrective Measures Study (required for all releases). This could include conducting treatability, pilot, laboratory and/or bench scale studies to assess the effectiveness of a treatment method.

The Workplan shall describe all aspects of the investigation, including project management, sampling and analysis, well drilling and installation and quality assurance and quality control. If the scope of the investigation is such that more than one phase is necessary, the Workplan must include a summary description of each phase. For example, the first phase of a facility investigation could be used to gather information necessary to focus the second phase into key areas of the facility that need further investigation.

The required format for a Workplan is described below:

1. Introduction

Briefly introduce the Workplan. Discuss the Order or Permit requiring the facility investigation and how the Workplan is organized.

2. Investigation Objectives

2.1 Project Objectives

Describe the overall objectives and critical elements of the facility investigation. State the general information needed from the site (e.g., soil chemistry, hydraulic conductivity of aquifer, stratigraphy, ground water flow direction, identification of potential receptors, etc.). The general information should be consistent with the objectives of the facility investigation and the data needs identified in the Current Conditions Report.

2.2 Data Quality Objectives

Provide data quality objectives that identify what data are needed and the intended use of the data.

3. Project Management

Describe how the investigation will be managed, including the following information:

- Organization chart showing key personnel, levels of authority and lines of communication
- Project Schedule
- Estimated Project Budget

Identify the individuals or positions who are responsible for: project management, field activities, laboratory analysis, database management, overall quality assurance, data validation, etc. Include a description of qualifications for personnel performing or directing the facility investigation, including contractor personnel.

4. Facility Background

Summarize existing contamination (e.g., contaminants, concentrations, etc.), local hydrogeologic setting and any other areas of concern at the facility. Include a map showing the general geographic location of the facility and a more detailed facility map showing the areas of contamination. Provide a reference to the Current Conditions Report and/or other applicable documents as a source of additional information.

5. Field Investigation

5.1 Task Description

Provide a qualitative description of each investigation task. Example tasks may include, but are not limited to the following:

- Task 1: Surface Soil Sampling
- Task 2: Surface Geophysics, Subsurface Soil Boring, and Borehole Geophysics
- Task 3: Data Gathering to Support Interim Corrective Measures
- Task 4: Monitoring Well Installation
- Task 5: Aquifer Testing
- Task 6: Ground Water Sampling
- Task 7: Potential Receptor Identification
- Task 8: Treatability Studies

5.2 Rationale for Sampling

Describe where all samples will be collected (location and depth), types of media that will be

sampled and the analytical parameters. Explain the rationale for each sampling point, the total number of sampling points, and any statistical approach used to select these points. The conceptual model of contaminant migration developed in the Current Conditions Report should be considered when selecting sampling locations and depths. If some possible sampling points are excluded, explain why. Describe any field screening techniques that will be used to identify samples for laboratory analysis. Include the rationale for use of field screening techniques and criteria for sample selection.

5.2.1 Background Samples

Background samples should be analyzed for the complete set of parameters for each medium; treat sediments, surface soils and subsurface soils as separate media. Background samples are collected, numbered, packaged, and sealed in the same manner as other samples. For long term and/or especially large projects, it is recommended that 10% of samples collected be from background locations.

5.3 Sample Analysis

List and discuss all analyses proposed for the project. Include a table that summarizes the following information for each analysis to be performed:

- Analytical Parameters
- Analytical Method Reference Number (from USEPA SW 846)
- Sample Preparation and/or Extraction Method Reference Number (from USEPA SW 846)
- Detection and Practical Quantitation Limits (Data above the detection limit but below the practical quantitation limit must be reported with the estimated concentration.)

Discuss the rationale for selection of the analytical parameters. The rationale must relate to site history and the facility investigation objectives. The achievable detection limits or quantitation limits stated in the selected methods must be adequate for valid comparisons of analytical results against any action levels or standards. For example, the objective may be to

collect ground water data for comparison with Maximum Contaminant Levels (MCL's). If this were the case, it would be important to ensure that any ground water test methods had detection limits below the MCL's. Give an explanation if all samples from the same medium will not be analyzed for the same parameters.

Provide the name(s) of the laboratory(s) that will be doing the analytical work. Indicate any special certifications or ratings of the laboratory. Describe the steps that will be taken to select and pre-qualify

analytical laboratories to be used including any previous audits and/or other criteria. If a definite laboratory has not yet been selected, list at least 3 laboratories that are being considered for the analytical work.

5.4 Sample Collection Procedures

Describe how sampling points will be selected in the field, and how these locations will be documented and marked for future reference. If a sampling grid will be used, describe the dimensions and lay out planned for the grid.

Outline sequentially or step-by-step the procedure for collecting a sample for each medium and each different sampling technique. Include a description of sampling equipment (including materials of construction), field measurements, sample preservation, housekeeping/ cleanliness techniques and well purging procedures. The procedure described must ensure that a representative sample is collected, and that sample handling does not result in cross contamination or unnecessary loss of contaminants. Special care in sample handling for volatile organic samples must be addressed.

Describe how and when duplicates, blanks, laboratory quality control samples and background samples will be collected. If samples will be filtered, describe filtration equipment and procedures.

The Owner/Operator or Respondent must include sufficient maps and tables to fully describe the sampling effort. This shall include, at a minimum, a map showing all proposed sampling locations and tables that contain the following information:

Sample Collection Table:

- Sampling Location/Interval
- Analytical Parameters (e.g., volatile organic compounds)
- Analytical Method Number
- Medium
- Preservation Method
- Holding Times (as specified in USEPA SW 846)
- Containers (quantity, size, type plus footnotes that discuss source and grade of containers)

Sample Summary Table:

- Sample Description/Area (include QC samples)
- Analytical Parameters
- Analytical Method Number
- Preparation or Extraction Method Number
- Medium
- Number of Sample Sites
- Number of Analyses

5.4.1 Equipment Decontamination

Describe the decontamination procedure for all drilling, sampling equipment (including metal sleeves), and field-parameter testing equipment.

The following is a recommended generic procedure for decontamination of sampling equipment:

- Wash with non-phosphate detergent
- Tap water rinse
- 0.1M nitric acid rinse (when cross contamination from metals is a concern)
- Deionized/distilled water rinse
- Pesticide grade solvent rinse (when semivolatiles and non-volatile organic contamination may be present)
- Deionized/distilled water rinse (twice)
- Organic free water rinse (HPLC grade)

The above procedure is not appropriate for every field condition. Clearly document the decontamination procedures.

5.4.2 Equipment Calibration and Maintenance

Logbooks or pre-formatted calibration worksheets should be maintained for major field instruments, to document servicing, maintenance and instrument modification. The calibration, maintenance and

operating procedures for all instruments, equipment and sampling tools must be based upon manufacturer's instructions. List all field equipment to be used, specify the maintenance/calibration frequency for each instrument and the calibration procedures (referenced in text and included in appendices).

5.4.3 Sample Packaging and Shipment

Describe how samples will be packaged and shipped. All applicable Department of Transportation regulations must be followed.

5.4.4 Sample Documentation

Discuss the use of all paperwork including field notebooks, record logs, photographs, sample paperwork, and Chain of Custody forms (include a blank copy in Workplan Appendices) and seals.

Describe how sample containers will be labeled and provide an example label if available. At a minimum, each sample container label should include: project ID, sample location, analytical parameters, date sampled and any preservative added to the sample.

A bound field log book must be maintained by the sampling team to provide a daily record of events. Field log books shall provide the means of recording all data regarding sample collection. All documentation in field books must be made in permanent ink. If an error is made, corrections must be made by crossing a line through the error and entering the correct information. Changes must be initialed, no entries shall be obliterated or rendered unreadable. Entries in the log book must include, at a minimum, the following for each day's sampling:

- Date
- Starting Time
- Meteorological Conditions
- Field Personnel Present
- Level of Personal Protection
- Site Identification
- Field Observations/Parameters
- Sample Identification Numbers
- Location and Description of Sampling Points
- Number of Samples Collected
- Time of Sample Collection
- Signature of Person Making the Entry

- Observation of Sample Characteristics
- Photo Log
- Deviations

5.4.5 Disposal of Contaminated Materials
Describe the storage and disposal methods for all contaminated cuttings, well development and purge water, disposable equipment, decontamination water, and any other contaminated materials. The waste material must be disposed of in a manner consistent with local, state and federal regulations.

5.4.6 Standard Operating Procedures

If Standard Operating Procedures (SOPs) are referenced, the relevant procedure must be summarized in the Workplan. The SOP must be specific to the type of tasks proposed and be clearly referenced in the Workplan. The SOP must also be directly applicable, as written, to the Workplan; otherwise, modifications to the SOP must be discussed. Include the full SOP description in the Workplan appendix.

5.5 Well Construction and Aquifer Testing

When new monitoring wells (or piezometers) are proposed, describe the drilling method, well design and construction details (e.g., depth of well, screen length, slot size, filter pack material, etc.) and well development procedures. Describe the rationale for proposed well locations and selection of all well design and construction criteria (i.e., provide rationale for selection of slot size and screen length).

When aquifer testing is proposed, describe the testing procedures, flow rates, which wells are involved, test periods, how water levels will be measured, and any other pertinent information.

6. Quality Assurance and Quality Control

Quality control checks of field and laboratory sampling and analysis serve two purposes: to document the data quality, and to identify areas of weakness within the measurement process which need correction.

Include a summary table of data quality assurance objectives that, at a minimum, lists:

- Analysis Group (e.g., volatile organic compounds)

- Medium
- Practical Quantitation Limits (PQL)
- Spike Recovery Control Limits (%R)
- Duplicate Control Limits +/- (RPD)
- QA Sample Frequency
- Data Validation

A reference may note the specific pages from USEPA's SW 846 Guidance Document that list the test method objectives for precision and accuracy. If the field and laboratory numerical data quality objectives for precision are the same and presented on a single table, then a statement should be made to this effect and added as a footnote to the table (e.g., "These limits apply to both field and laboratory duplicates"). Include a copy of the analytical laboratory quality assurance/quality control plan in the appendices of the Workplan and provide the equations for calculating precision and accuracy.

6.1 Field Quality Control Samples

6.1.1 Field Duplicates

Duplicates are additional samples that must be collected to check for sampling and analytical precision. Duplicate samples for all parameters and media must be collected at a frequency of at least one sample per week or 10 percent of all field samples, whichever is greater.

Duplicates should be collected from points which are known or suspected to be contaminated. For large projects, duplicates should be spread out over the entire site and collected at regular intervals.

Duplicates must be collected, numbered, packaged, and sealed in the same manner as other samples; duplicate samples are assigned separate sample numbers and submitted blind to the laboratory.

6.1.2 Blank Samples

Blanks are samples that must be collected to check for possible cross-contamination during sample collection and shipment and in the laboratory. Blank samples should be analyzed for all parameters being evaluated. At least one blank sample per day must be done for all water and air sampling. Additionally, field blanks are required for soil sampling if non-dedicated field equipment is being used for sample collection.

Blank samples must be prepared using analytically-certified, organic-free (HPLC-grade) water for organic parameters and metal-free (deionized-distilled) water for inorganic parameters. Blanks must be collected, numbered, packaged, and sealed in the same manner as other samples; blank samples are assigned separate sample numbers and submitted blind to the laboratory. The following types of blank samples may be required:

Equipment Blank: An equipment blank must be collected when sampling equipment (e.g., bladder pump) or a sample collection vessel (e.g., a bailer or beaker) is decontaminated and reused in the field. Use the appropriate "blank" water to rinse the sampling equipment after the equipment has been decontaminated and then collect this water in the proper sample containers.

Field Bottle Blank: This type of blank must be collected when sampling equipment decontamination is not necessary. The field bottle blank is obtained by pouring the appropriate "blank" water into a container at a sampling point.

6.2 Laboratory Quality Control Samples

Laboratories routinely perform medium spike and laboratory duplicate analysis on field samples as a quality control check. A minimum of one field sample per week or 1 per 20 samples (including field blanks and duplicates), whichever is greater, must be designated as the "Lab QC Sample" for the medium and laboratory duplicate analysis.

Laboratory quality control samples should be selected from sampling points which are suspected to be moderately contaminated. Label the bottles and all copies of the paperwork as "Lab QC Sample"; the laboratory must know that this sample is for their QC analyses. The first laboratory QC sample of the sampling effort should be part of the first or second day's shipment. Subsequent laboratory QC samples should be spread out over the entire sampling effort.

For water media, 2-3 times the normal sample volume must be collected for the laboratory QC sample. Additional volume is usually not necessary for soil samples.

6.3 Performance System Audits by the Owner/Operator or Respondent

This section should describe any internal performance and/or system audit which the Owner/Operator or Respondent will conduct to monitor the capability and performance of the project. The extent of the audit program should reflect the data quality needs and intended data uses. Audits are used to quickly identify and correct problems thus preventing and/or reducing costly errors. For example, a performance audit could include monitoring field activities to ensure consistency with the workplan. If the audit strategy has already been addressed in a QA program plan or standard operating procedure, cite the appropriate section which contains the information.

7. Data Management

Describe how investigation data and results will be evaluated, documented and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data. To document any quality assurance anomalies, the Facility Investigation QC Summary Forms (see Appendix A of this attachment) must be completed by the analytical laboratory and submitted as part of the Facility Investigation Report. In addition, provide examples of any other forms or checklists to be used.

Identify and discuss personnel and data management responsibilities, all field, laboratory and other data to be recorded and maintained, and any statistical methods that may be used to manipulate the data.

8. References

Provide a list of references cited in the Workplan.

B. Facility Investigation Report (Report)

A Report must be prepared that describes the entire site investigation and presents the basic results. The Report must clearly present an evaluation of investigation results (e.g., all potential contaminant source areas must be identified, potential migration pathways must be described, and affected media shown, etc.).

The Report must also include an evaluation of the completeness of the investigation and indicate if additional

work is needed. This work could include additional investigation activities and/or interim corrective measures to stabilize contaminant release areas and limit contaminant migration. If additional work is needed, the Owner/Operator or Respondent must submit a Phase 2 Workplan and/or Interim Corrective Measures Workplan must be submitted to the Department along with the Report.

At a minimum, the Report must include:

- A summary of investigation results (include tables that summarize analytical results).
- A complete description of the investigation, including all data necessary to understand the project in its entirety including all investigative methods and procedures.
- A discussion of key decision points encountered and resolved during the course of the investigation.
- Graphical displays such as isopleths, potentiometric surface maps, cross-sections, plume contour maps (showing concentration levels, isoconcentration contours), facility maps (showing sample locations, etc.) and regional maps (showing receptor areas, water supply wells, etc.) that describe report results. Highlight important facts such as geologic features that may affect contaminant transport.
- Tables that list all chemistry data for each medium investigated.
- An analysis of current and existing ground water data to illustrate temporal changes for both water chemistry and piezometric data (use graphics whenever possible).
- A description of potential or known impacts on human and environmental receptors from releases at the facility. Depending on the site specific circumstances, this analysis could be based on the results from contaminant dispersion models if field validation is performed.
- A discussion of any upset conditions that occurred during any sampling events or laboratory analysis that may influence the results. The discussion must include any problems with the chain of custody procedures, sample holding times, sample preservation, handling and transport procedures, field equipment calibration and handling, field blank results that show potential sample contamination and any field duplicate results that indicate a potential problem. Summary tables must be provided that show the upset condition and the samples that could be impacted. The Facility Investigation QC Summary Forms (see Appendix A of

this attachment) must be completed by the analytical laboratory and submitted as part of the Report.

- Assessment of the entire QA/QC program effectiveness.
- Data validation results should be documented in the Report.

In addition to the Report, the Department may require the Owner/Operator or Respondent to submit the analytical results (database) on a floppy disk (Department will specify the format). All raw laboratory and field data (e.g., analytical reports) must be kept at the facility and be made available or sent to the Department upon request.

ATTACHMENT 6

COMMUNITY PROFILE OUTLINE FOR PG&E MLPP

The following items should be included in the Community Profile:

Site Description

- Description of proposed project.
- Map.
- Description of the site/facility location.
- Description of the surrounding land uses and environmental resources (including proximity to residential housing, schools, churches, etc.).
- Visibility of the site to neighbors.
- Demographics of community in which the site is located (e.g., socioeconomic level, ethnic composition, specific language considerations, etc.). This information may be found in local libraries (e.g., census records).

Local Interest

- Contacts with community members—any inquiries from community members, groups, organizations, etc. (include names, phone numbers, and addresses on the key contact list).
- Community interactions—any current meetings, events, presentations, etc.
- Media coverage—any newspaper, magazine, television, etc., coverage.
- Government contacts—city and county staff, state and local elected officials.

Key Contact List

- Names, addresses, and phone numbers of city manager, city/county planning department staff, local elected officials, and other community members with whom previous contact has been made.

Past Public Involvement Activities

- Any ad hoc committees, community meetings, workshops, letters, newsletters, etc., about the site or similar activity.

Key Issues and Concerns

- Any specific concerns/issues raised by the community regarding the site/facility or any activities performed on the site/facility.
- Any anticipated concerns/issues regarding the site/facility.
- Any general environmental concerns/issues in the community.

PP Review _____ Date_____

ATTACHMENT 7

SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY

Purpose

The purpose of the Corrective Measures Study (CMS) is to identify and evaluate potential remedial alternatives to address contaminant releases from a facility.

Scope

A Corrective Measures Study Workplan and a Corrective Measures Study Report are, unless otherwise specified by the Department of Toxic Substances Control (Department), required elements of the CMS. The Scope of Work (SOW) for the Corrective Measures Study Workplan and Report describe what should be included in each document. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If the Owner/Operator or Respondent can justify, to the satisfaction of the Department, that sections of a plan and/or report are not needed in the given site specific situation, then the Department may waive that requirement.

The scope and substance of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Owner/Operator's or Respondent's of sites with complex environmental problems may need to evaluate a number of technologies and corrective measure alternatives. For other facilities, however, it may be appropriate to evaluate a single corrective measure alternative.

The Department may require the Owner/Operator or Respondent to conduct additional studies beyond what is discussed in the SOWs in order to support the CMS. The Owner/Operator or Respondent will furnish all personnel, materials and services necessary to conduct the additional tasks. The SOW for the Corrective Measures Study Workplan and Report are specified below:

A. Corrective Measures Study Workplan

The purpose of the Corrective Measures Study (CMS) Workplan is to specify how the CMS Report will be prepared. The CMS Workplan shall, at a minimum, include the following elements:

1. A brief project summary.
2. A site-specific description of the overall purpose of the CMS.
3. A description of the proposed media cleanup standards and points of compliance that will be used in the corrective measures study report. Include the

justification and supporting rationale for the proposed media cleanup standards and points of compliance. The proposed media cleanup standards must be based on available promulgated federal and state cleanup standards, risk based analysis, data and information gathered during the corrective action process (e.g., from RCRA Facility Investigation, etc.), and/or information from other applicable guidance documents. The Department may require that the Owner/Operator or Respondent conduct a risk assessment to gather information for establishing cleanup standards. Based on the CMS Report and other information including public comments, the Department will establish final cleanup standards and points of compliance as part of the remedy selection process.

4. A description of the specific corrective measures technologies and/or corrective measure alternatives that will be studied.
5. A description of the general approach to investigating and evaluating potential corrective measures.
6. A detailed description of any proposed treatability, pilot, laboratory and/or bench scale studies. Proposed studies must be further detailed in either the CMS Workplan or in separate workplans. Submittal times for separate workplans must be included in the CMS Workplan project schedule.
7. A proposed outline for the CMS Report including a description of how information will be presented.
8. A description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, budget and personnel. Include a description of qualifications for personnel directing or performing the work.
9. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Report) are to be submitted to the Department.

B. Corrective Measures Study Report

The CMS Report shall, at a minimum, include the following elements:

1. Introduction/Purpose—Describe the purpose and intent of the document.
2. Description of Current Conditions—The Owner/Operator or Respondent shall include a brief discussion of any new

information that has been developed since the RCRA Facility Investigation Report was finalized. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measure alternative(s).

3. Proposed Media Cleanup Standards—The Owner/Operator or Respondent shall describe and justify the proposed media cleanup standards and points of compliance.
4. Identification and Screening of Corrective Measure Technologies

- a. Identification

List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the media cleanup standards. The Owner/Operator or Respondent should consider including a table that summarizes the available technologies.

The Owner/Operator or Respondent should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies. Innovative technologies are defined as those technologies for source control other than incineration, solidification/stabilization and pumping with conventional treatment for contaminated ground water. Innovative treatment technologies may require extra initial effort to gather information, analyze options and to adapt the technology to site specific situations. However, in the long run, innovative treatment technologies could be more cost effective. Treatability studies and on-site pilot scale studies may be necessary for evaluating innovative treatment technologies.

- b. Screening

Technologies must be screened to eliminate those that may prove unfeasible to implement given the existing set of waste and site-specific conditions. The screening is accomplished by evaluating technology limitations (e.g., for volume, area, contaminant concentrations, interferences, etc.) and using contaminant and site characterization information from the RCRA Facility Investigation to screen out technologies that cannot be fully implemented at the facility. The screening process must focus on eliminating those technologies that have severe limitations

for a given set of waste and site-specific conditions (e.g., depth to ground water and aquitards). As with all decisions during the CMS, the screening of technologies must be fully documented. This is especially true if the screening step indicates that only one corrective action technology should proceed to the next step and be evaluated in detail. List the corrective action technologies selected for further evaluation. Also document the reasons for excluding any corrective action technologies. The Owner/Operator or Respondent should consider including a table that summarizes the findings.

5. Corrective Measure Alternative Development

Assemble the technologies that pass the screening step into specific alternatives that have potential to meet the corrective action objectives. Options for addressing less complex sites could be relatively straightforward and may only require evaluation of a single or limited number of alternatives.

Each alternative may consist of an individual technology or a combination of technologies used in sequence (e.g., treatment train). Depending on the site-specific situation, different alternatives may be considered for separate areas of the facility. List and briefly describe each corrective measure alternative.

6. Evaluation of Corrective Measure Alternatives

The four corrective action standards and five remedy selection decision factors described below shall be used to evaluate the corrective measure alternatives. All alternatives must meet the corrective action standards before the remedy selection decision factors are used for further evaluation.

The corrective action standards are as follows:

- Be protective of human health and the environment
- Attain media cleanup standards
- Control the source(s) of releases in order to reduce or eliminate, to the extent practicable, further releases of hazardous wastes (including hazardous constituents) that may pose a threat to human health and the environment
- Comply with any applicable federal, state, and local standards for management of wastes

The remedy selection decision factors are as follows:

- Short- and Long-Term Effectiveness
- Reduction of Toxicity, Mobility and/or Volume
- Long-Term Reliability
- Implementability
- Cost

The corrective action standards and decision factors are described in further detail below.

a. Be Protective of Human Health and the Environment

Describe in detail how each corrective measure alternative is protective of human health and the environment.

This standard for protection of human health and the environment is a general mandate of the RCRA statute. The standard requires that remedies include any measures that are needed to be protective. These measures may or may not be directly related to media cleanup, source control, or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to a contaminated drinking water supply.

b. Attain Media Cleanup Standards

Describe in detail each corrective measure alternative's ability to meet the proposed media cleanup standards.

c. Control the Sources of Releases

Describe in detail each corrective measure alternative's ability to control the sources of releases.

A critical objective of any remedy must be to stop further environmental degradation by controlling or eliminating further releases that may pose a threat to human health and the environment. Unless source control measures are taken, efforts to cleanup releases may be ineffective or, at best, will essentially involve a perpetual cleanup. Therefore, an effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective action effort.

The source control standard is not intended to mandate a specific remedy or class of remedies. Instead, the Owner/Operator or Respondent is encouraged to examine a wide range of options. This

standard should not be interpreted to preclude the equal consideration of using other protective remedies to control the source, such as partial waste removal, capping, slurry walls, in-situ treatment/stabilization and consolidation.

d. Comply With Any Applicable Standards for Management of Wastes

Discuss how any specific waste management activities will be conducted in compliance with all applicable state or federal regulations (e.g., CAMU closure requirements, land disposal restrictions).

e. Short- and Long-Term Effectiveness

Each corrective measure alternative must be evaluated with regard to its effectiveness in protecting human health and the environment and meeting the proposed media cleanup standards. Both short- and long-term components of effectiveness must be evaluated; short-term referring to the construction and implementation period, and long-term referring to the period after the remedial action is complete. Estimate approximately how much time it will take to implement each corrective measure alternative, the length of time before initial beneficial results are obtained, and the length of time required to achieve the proposed media cleanup standards.

The evaluation of short-term effectiveness must include possible threats to the safety of nearby communities, workers, and environmentally sensitive areas (e.g., oceans, wetlands) during construction of the corrective measure alternative. Factors to consider are fire, explosion, exposure to hazardous substances and potential threats associated with treatment, excavation, transportation and re-disposal or containment of waste material. Laboratory and/or field studies are extremely useful in estimating the effectiveness of corrective measures and should be used whenever possible.

The evaluation of long-term effectiveness must include possible threats to the safety of nearby communities' workers, and environmentally sensitive areas (e.g., oceans, wetlands) during operation of the corrective measure alternative.

f. Reduction of Toxicity, Mobility and/or Volume

Each corrective measure alternative must be evaluated for its ability to reduce the toxicity, mobility, and/or volume of the contaminated media. Reduction in toxicity, mobility, and/or volume refers to changes in one or more characteristics of the contaminated media by the use of corrective measures that decrease the inherent threats associated with the media.

Estimate how much the corrective measure alternative will reduce the waste toxicity, volume and/or mobility (compare initial site conditions to post-corrective measure conditions). In general, the Department strongly prefers corrective measures that have a high degree of permanence and reduce the contaminant toxicity, mobility and volume through treatment.

g. Long-Term Reliability

Each corrective measure alternative must be evaluated with regards to its long-term reliability. This evaluation includes consideration of operation and maintenance requirements.

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. Discuss whether the technology or combination of technologies have been used effectively together under analogous site conditions, whether failure of any one technology in the alternative has an impact on receptors or contaminant migration, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site (e.g., heavy rain storms, earthquakes, etc).

Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements must also be considered.

Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement.

Each corrective measure alternative shall be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the necessary or required level of effectiveness can be maintained.

h. Implementability of Corrective Measure Alternatives

The implementability criterion addresses the technical and administrative feasibility of implementing a corrective measure alternative and the availability of various services and materials needed during implementation. Each corrective measure alternative must be evaluated using the following criteria:

Construction and Operation: Corrective measure alternatives must be feasible to implement given the existing set of waste and site-specific conditions. This evaluation was initially done for specific technologies during the screening process and is addressed again in this detailed analysis of the alternative as a whole. It is not intended that the screening process be repeated here, but instead to highlight key differences and/or changes from the screening analysis that may result from combining technologies.

Administrative Feasibility: Discuss the administrative activities needed to implement the corrective measure alternative (e.g., permits, public acceptance, rights of way, off-site approvals, etc.).

Availability of Services and Materials: Discuss the availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials, and the availability of prospective technologies for each corrective measure alternative.

i. Cost

Develop a preliminary cost estimate for each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs. Include a description of how the costs were estimated and what assumptions were used.

- The preliminary capital cost estimate must consider all key costs including, at a minimum, costs for engineering, mobilization, demobilization, site preparation, construction, materials, labor, equipment purchase and rental, sampling, analysis, waste disposal, permitting and health and safety measures.
 - The preliminary operation and maintenance cost estimate must consider all key costs including, at a minimum, costs for labor, training, sampling, analysis, maintenance materials, utilities, waste disposal, waste treatment, permitting and health and safety measures.
 - Calculate the net present value of preliminary capital and operation and maintenance costs for each corrective measure alternative.
7. Owner/Operator or Respondent's Recommended Corrective Measure Alternative

The Owner/Operator or Respondent may recommend a preferred corrective measure alternative for consideration by the Department. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above.

Based on the CMS Report and other information including public comments, the Department will establish final cleanup standards, points of compliance and will select a final remedy for the facility.

ATTACHMENT 8

SCOPE OF WORK FOR CORRECTIVE MEASURES IMPLEMENTATION

Purpose

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the corrective measure or measures selected by the Department. Corrective measures are intended to protect human health and/or the environment from hazardous waste releases from the Facility. The Owner/Operator or Respondent will furnish all personnel, materials and services necessary to implement the corrective measures program.

Scope

The documents required for Corrective Measures Implementation are, unless the Department of Toxic Substances Control (Department) specifies otherwise, a Corrective Measures Implementation Workplan, Operation and Maintenance Plan, Draft Plans and Specifications, Final Plans and Specifications, Construction Workplan, Construction Completion Report and Corrective Measure Completion Report. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If the Owner/Operator or Respondent can justify, to the satisfaction of the Department, that a plan and/or report or portions thereof are not needed in the given site specific situation, then the Department may waive that requirement.

The scope and substance of the CMI should be focused to fit the complexity of the site-specific situation. Not all of the documents included in the CMI SOW may be needed for every facility.

The Department may require the Owner/Operator or Respondent to conduct additional studies beyond what is discussed in the SOWs in order to support the CMI program. The Owner/Operator or Respondent will furnish all personnel, materials and services necessary to conduct the additional tasks.

A. Corrective Measures Implementation Workplan

The Owner/Operator or Respondent shall prepare a CMI Workplan that clearly describes the size, shape, form, and content of the proposed corrective measure, the key components or elements that are needed, describes the designers vision of the corrective measure in the form of conceptual drawings and schematics, and includes procedures and schedules for implementing the corrective measure(s).

Note that more than one CMI Workplan may be needed in situations where there is a complex site with multiple

technologies being employed at different locations. The CMI Workplan must be approved by the Department prior to implementation. The CMI Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary description of the project.

2. Media Cleanup Standards

Discuss the media cleanup standards for the facility.

3. Conceptual Model of Contaminant Migration

It is important to know where the contaminants are and to understand how they are moving before an adequate corrective measure can be developed. To address this critical question, the Owner/Operator or Respondent must present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to ground water, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document. If not, then field validation of the conceptual model is required.

4. Description of Corrective Measures

Considering the conceptual model of contaminant migration, qualitatively describe what the corrective measure is supposed to do and how it will function at the Facility. Discuss the constructability of the corrective measure and its ability to meet the corrective measure objectives.

5. Data Sufficiency

Review existing data needed to support the design effort and establish whether or not there are sufficient accurate data available for this purpose. The Owner/Operator or Respondent must summarize the

assessment findings and specify any additional data needed to complete the corrective measure design. The Department may require or the Owner/Operator or Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans must be included in the project schedule.

6. Project Management

Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure design and implementation effort (including contractor personnel).

7. Project Schedule

The project schedule must specify all significant steps in the process and when all CMI deliverables (e.g., Operation and Maintenance Plan, Corrective Measure Construction Workplan, etc.) are to be submitted to the Department.

8. Design Criteria

Specify performance requirements for the overall corrective measure and for each major component. The Owner/Operator or Respondent must select equipment that meets the performance requirements.

9. Design Basis

Discuss the process and methods for designing all major components of the corrective measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions

10. Conceptual Process/Schematic Diagrams

11. Site Plan Showing Preliminary Plant Layout and/or Treatment Area

12. Tables Listing Number and Type of Major Components with Approximate Dimensions

13. Tables Giving Preliminary Mass Balances

14. Site Safety and Security Provisions (e.g., fences, fire control, etc.)

15. Waste Management Practices

Describe the wastes generated by the construction of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

16. Required Permits

List and describe the permits needed to construct and operate the corrective measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

17. Long-Lead Procurement Considerations

The Owner/Operator or Respondent shall prepare a list of any elements or components of the corrective measure that will require custom fabrication or for some other reason must be considered as long-lead procurement items. The list must include the reason why the items are considered long-lead items, the length of time necessary for procurement, and recognized sources of such procurement;

18. Appendices, including:

- Design Data—Tabulations of significant data and assumptions used in the design effort
- Equations—List and describe the source of major equations used in the design process
- Sample Calculations—Present and explain one example calculation for significant or unique design calculations
- Laboratory or Field Test Results

B. Operation and Maintenance Plan

The Owner/Operator or Respondent shall prepare an Operation and Maintenance (O&M) Plan that includes a strategy and procedures for performing operations, long term maintenance, and monitoring of the corrective measure. A draft Operation and Maintenance Plan shall be submitted to the Department simultaneously with the draft Plans and Specifications. A final Operation and Maintenance Plan shall be submitted to the Department simultaneously with the final Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary description of the project.

2. Project Management

Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will operate and maintain the corrective measures (including contractor personnel);

3. System Description

Describe the corrective measure and identify significant equipment.

4. Personnel Training

Describe the training process for O&M personnel. The Owner/Operator or Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

5. Start-Up Procedures

Describe system start-up procedures including and operational testing.

6. Operation and Maintenance Procedures

Describe normal operation and maintenance procedures including:

- a. Description of tasks for operation
- b. Description of tasks for maintenance
- c. Description of prescribed treatment or operation conditions
- d. Schedule showing frequency of each O&M task

7. Replacement schedule for equipment and installed components.

8. Waste Management Practices

Describe the wastes generated by operation of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

9. Sampling and Monitoring

Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. If sampling activities are necessary, the O&M plan must include a complete sampling and analysis section which specifies at a minimum the following information:

- a. Description and purpose of monitoring tasks
- b. Data quality objectives
- c. Analytical test methods and detection limits
- d. Name of analytical laboratory
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment
- g. Field quality control procedures:
 - Duplicates (10% of all field samples)
 - Blanks (field, equipment, etc.)
 - Equipment calibration and maintenance
 - Equipment decontamination
 - Sample containers
 - Sample preservation
 - Sample holding times (must be specified)
 - Sample packaging and shipment
 - Sample documentation (field notebooks, sample labeling, etc)
 - Chain of custody
- h. Criteria for data acceptance and rejection
- i. Schedule of monitoring frequency

The Owner/Operator or Respondent shall follow all Department and USEPA guidance for sampling and analysis. The Department may request that the sampling and analysis section be a separate document.

10. Corrective Measure Completion Criteria

Describe the process and criteria (e.g., ground water cleanup goal met at all compliance points for one year) for determining when corrective measures may cease. Also describe the process and criteria for determining when maintenance and monitoring may cease. Criteria for corrective measures such as a landfill cap must be carefully crafted to account for the fact that a landfill cap will never actually "cease" but will need to be maintained and monitored for a long period of time. Satisfaction of the completion criteria will trigger preparation and submittal of the Corrective Measure Completion Report.

11. O&M Contingency Procedures:

- a. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures.
- b. Should the corrective measure suffer complete failure, specify alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants that may endanger public health and/or the environment or exceed cleanup standards.
- c. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), the Owner/Operator or Respondent will orally notify the Department within 24 hours of the event and will notify the Department in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment.
- d. Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications and/or will not achieve the cleanup goals in the expected timeframe. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure were to fail, then the secondary would be implemented. This section would thus specify that if the primary corrective measure failed, then design plans would be developed for the secondary measure.

12. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The O&M Plan shall specify that the Owner/Operator or Respondent collect and maintain the following information:

- a. Progress Report Information

- Work Accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.)
 - Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.)
- b. Monitoring and laboratory data
 - c. Records of operating costs
 - d. Personnel, maintenance and inspection records

These data and information should be used to prepare Progress Reports and the Corrective Measure Completion Report.

C. Draft Plans and Specifications

The Owner/Operator or Respondent shall prepare draft Plans and Specifications that are based on the CMI Workplan but include additional design detail. A draft Operation and Maintenance Plan and Construction Workplan shall be submitted to the Department simultaneously with the draft Plans and Specifications. The draft design package must include drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. The following are some of the elements that may be required:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the

project specifications to the Department, the Owner/Operator or Respondent shall:

- Proofread the specifications for accuracy and consistency with the CMI Workplan
- Coordinate and cross-check the specifications and drawings

D. Final Plans and Specifications

The Owner/Operator or Respondent shall prepare final Plans and Specifications that are sufficient to be included in a contract document and be advertised for bid. A final Operation and Maintenance Plan and Construction Workplan shall be submitted to the Department simultaneously with the final Plans and Specifications. The final design package must consist of the detailed drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are as follows:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Piping and Instrumentation Diagrams
- Structural Drawings
- Excavation and Earthwork Drawings
- Site Preparation and Field Work Standards
- Construction Drawings
- Installation Drawings
- Equipment Lists
- Detailed Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the final project specifications to the Department, the Owner/Operator or Respondent shall:

- Proofread the specifications for accuracy and consistency with the preliminary design
- Coordinate and cross-check the specifications and drawings

E. Construction Workplan

The Owner/Operator or Respondent shall prepare a Construction Workplan that documents the overall management strategy, construction quality assurance procedures and

schedule for constructing the corrective measure. A draft Construction Workplan shall be submitted to the Department simultaneously with the draft Plans and Specifications and draft Operation and Maintenance Plan. A final Construction Workplan shall be submitted to the Department simultaneously with the final Plans and Specifications and final Operation and Maintenance Plan. Upon receipt of written approval from the Department, the Owner/Operator or Respondent shall commence the construction process and implement the Construction Workplan in accordance with the schedule and provisions contained therein. The Construction Workplan must be approved by the Department prior to the start of corrective measure construction. The Construction Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary description of the project.

2. Project Management

Describe the construction management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure construction effort and provide construction quality assurance/quality control (including contractor personnel);

3. Project Schedule

The project schedule must include timing for key elements of the bidding process, timing for initiation and completion of all major corrective measure construction tasks as specified in the Final Plans and Specifications, and specify when the Construction Completion Report is to be submitted to the Department;

4. Construction Quality Assurance/Quality Control Program

The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria, plans and specifications. The Construction Workplan must include a complete construction quality assurance program to be implemented by the Owner/Operator or Respondent.

5. Waste Management Procedures

Describe the wastes generated by construction of the corrective measure and how they will be managed.

6. Sampling and Monitoring

Sampling and monitoring activities may be needed for construction quality assurance/quality control and/or other construction related purposes. If sampling activities are necessary, the Construction Workplan must include a complete sampling and analysis section that specifies, at a minimum, the following information:

- a. Description and purpose of monitoring tasks
- b. Data quality objectives;
- c. Analytical test methods and detection limits
- d. Name of analytical laboratory
- e. Laboratory quality control (include laboratory QA/QC procedures in appendices)
- f. Sample collection procedures and equipment
- g. Field quality control procedures:
 - duplicates (10% of all field samples)
 - blanks (field, equipment, etc.)
 - equipment calibration and maintenance
 - equipment decontamination
 - sample containers
 - sample preservation
 - sample holding times (must be specified)
 - sample packaging and shipment
 - sample documentation (field notebooks, sample labeling, etc);
 - chain of custody
- h. Criteria for data acceptance and rejection
- i. Schedule of monitoring frequency

The Owner/Operator or Respondent shall follow all Department and USEPA guidance for sampling and analysis. The Department may request that the sampling and analysis section be a separate document.

7. Construction Contingency Procedures

- a. Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of the Department, must be included in the Construction Workplan;
- b. The Construction Workplan must specify that, in the event of a construction emergency (e.g., fire, earthwork failure, etc.), the Owner/Operator or

Respondent will orally notify the Department within 24 hours of the event and will notify the Department in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on public health and/or the environment; and

- c. Procedures to be implemented if unforeseen events prevent corrective measure construction. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure could not be constructed, then the secondary would be implemented. This section would thus specify that if the primary corrective measure could not be constructed, then design plans would be developed for the secondary measure.

8. Construction safety procedures should be specified in a separate Health and Safety Plan.

9. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The Construction Workplan shall specify that the Owner/Operator or Respondent collect and maintain the following information:

- a. Progress Report Information
 - Work Accomplishments (e.g., hours of operation, excavated volumes, nature and volume of wastes generated, area of cap completed, length of trench completed, etc.)
 - Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.)
- b. Monitoring and laboratory data
- c. Records of construction costs
- d. Personnel, maintenance and inspection records

This data and information should be used to prepare progress reports and the Construction Completion Report.

10. Cost Estimate/Financial Assurance

If financial assurance for corrective measure construction and operation is required by an enforcement order, facility permit, or through use of Department discretion, the Construction Workplan must include a cost estimate, specify which financial mechanism will be used and when the mechanism will be established. The cost estimate shall include both construction and operation and maintenance costs. An initial cost estimate shall be included in the draft Construction Workplan and a final cost estimate shall be included in the final Construction Workplan. The financial assurance mechanism may include a performance or surety bond, a trust fund, a letter of credit, financial test and corporate guarantee equivalent to that in the California Code of Regulations, Title 22, Section 66264.143, 66265.143 or any other mechanism acceptable to the Department.

Financial assurance mechanisms are used to assure the Department that the Owner/Operator or Respondent has adequate financial resources to construct and operate the corrective measure.

F. Construction Completion Report

The Owner/Operator or Respondent shall prepare a Construction Completion Report, which documents how the completed project is consistent with the Final Plans and Specifications. A Construction Completion Report shall be submitted to the Department when the construction and any operational tests have been completed. The Construction Completion Report shall, at a minimum, include the following elements:

1. Purpose
2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications
3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project

4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria
5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed
6. Summary of any inspection findings (include copies of key inspection documents in appendices)
7. As built drawings
8. A schedule indicating when any treatment systems will begin full scale operations

G. Corrective Measure Completion Report

The Owner/Operator or Respondent shall prepare a Corrective Measure Completion Report when the Owner/Operator or Respondent believes that the corrective measure completion criteria have been satisfied. The purpose of the Corrective Measure Completion Report is to fully document how the corrective measure completion criteria have been satisfied and to justify why the corrective measure and/or monitoring may cease. The Corrective Measure Completion Report shall, at a minimum, include the following elements:

1. Purpose.
2. Synopsis of the corrective measure.
3. Corrective Measure Completion Criteria.
4. Describe the process and criteria for determining when corrective measures, maintenance and monitoring may cease. Corrective measure completion criteria were given in the final Operation and Maintenance (O&M) Plan.
5. Demonstration that the completion criteria have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria.
6. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.).
7. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed.

8. Summary of inspection findings (include copies of key inspection documents in appendices).
9. Summary of total operation and maintenance costs.

H. Submittal Summary

The following list provides a summary of when and how key documents should be submitted to the Department. The Department may adjust this list to meet site-specific circumstances.

1. The submittal schedule for the documents listed below should be included in an enforcement order, permit or otherwise specified by the department.
 - a. CMI Workplan
2. The submittal schedule for the documents listed below must be specified in the CMI Workplan. The groupings reflect which documents should be submitted together.
 - a. Draft Plans and Specifications
 - b. Draft Operation and Maintenance Plan
 - c. Draft Construction Workplan
 - d. Final Plans and Specifications
 - e. Final Operation and Maintenance Plan
 - f. Final Construction Workplan
3. The submittal schedule for the document listed below must be specified in the Final Construction Workplan.
 - Construction Completion Report
4. The submittal schedule for the document listed below is based on when the Owner/Operator or Respondent believes the completion criteria have been satisfied.
 - Corrective Measure Completion Report
5. The submittal schedule for Progress Reports and a Health and Safety Plan shall be specified in the order or permit.

ATTACHMENT 9

CORRECTIVE ACTION COST RECOVERY ESTIMATE WORKSHEET FOR PG&E MOSS LANDING POWER PLANT FACILITY July 1, 2003 - June 30, 2004

TASK #	MILESTONE/TASK	PERMIT STAFF						GEOLOGIC STAFF				CHEMISTRY SUPPORT		OFFICE TECHNICIAN		TRAVEL		TOTAL HOURS	TOTAL ESTIMATED COST
		HSE		SUP. HSS I		SUP. HSE II		HSEG		SUP.HSEG I		SR. HAZ SUB SCI							
		Rate= \$111		Rate= \$115		Rate= \$133		Rate= \$111		Rate= \$121		Rate= \$115		Rate= \$57					
		(Class Code: 3564)		(Class Code: 3566)		(Class Code: 3723)		(Class Code: 3728)		(Class Code: 3730)		(Class Code: 3565)		(Class Code: 1139)					
		HRS	TOTAL	HRS	TOTAL	HRS	TOTAL	HRS	TOTAL	HRS	TOTAL	HRS	TOTAL	HRS	TOTAL	\$200	DAY		
1	Site-wide Soil and Groundwater Impacts	75.00	\$8,325.00	20.00	\$2,300.00	3.00	\$399.00	75.00	\$8,325.00	15.00	\$1,815.00	6.00	\$690.00	5.00	\$285.00	\$1,600.00		199.00	\$23,739.00
2	Western Tank Farm Oversight and Report Review	20.00	\$2,220.00	5.00	\$575.00	1.00	\$133.00	20.00	\$2,220.00	2.00	\$242.00	2.00	\$230.00	3.00	\$171.00	\$800.00		53.00	\$6,591.00
3	Review Three 2001 Post Demolition Reports	10.00	\$1,110.00	3.00	\$345.00	1.00	\$133.00	10.00	\$1,110.00	1.00	\$121.00	1.00	\$115.00	3.00	\$171.00			29.00	\$3,105.00
4	Interim Measure and Meetings Involving the Western, Central and Eastern Tank Farms	50.00	\$5,550.00	8.00	\$920.00	1.00	\$133.00	50.00	\$5,550.00	8.00	\$968.00	1.00	\$115.00	5.00	\$285.00	\$1,600.00		123.00	\$15,121.00
	Subtotal	155.00	\$17,205.00	36.00	\$4,140.00	6.00	\$798.00	155.00	\$17,205.00	26.00	\$3,146.00	10.00	\$1,150.00	16.00	\$912.00	\$4,000.00		404.00	\$48,556.00
5	Project Management @ 15%	23.25	\$2,580.75	5.40	\$621.00	0.90	\$119.70	23.25	\$2,580.75	3.9	\$471.90	1.50	\$172.50	2.4	\$136.80	\$600.00		60.6	\$7,283.40
6	Contingency @ 10%	15.50	\$1,720.50	3.60	\$414.00	0.60	\$79.80	15.5	\$1,720.50	2.6	\$314.60	1.00	\$115.00	1.6	\$91.20	\$400.00		40.4	\$4,855.60
7	Total	193.75	\$21,506.25	45.00	\$5,175.00	7.50	\$997.50	193.75	\$21,506.25	32.50	\$3,932.50	12.50	\$1,437.50	20.00	\$1,140.00	\$5,000.00		505.00	\$60,695.00

Note: 1. Hourly rates based on June 6, 2003 memo from Harriet Klyan, Chief, Financial Operations Branch, DTSC. Rates include 166.18% Indirect Rate for Hazardous Waste Management Program.

Last edited on June 10, 2003